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ORIGINAL ARTICLES.

CORROSIVE SUBLIMATE AS A GERMICIDE.[1]

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WHEN I began the experiments on which this paper is based, when in fact I had demonstrated the chief facts herein, I did not know that Koch's work on the germicidal value of sublimate had ever been seriously questioned. The papers by Geppert[2] and Abbott[3] are the only noteworthy ones bearing on this subject that I have been able to find.

Geppert saw the danger of carrying over with the germs that had been in the disinfecting solution enough of the disinfectant to act as an antiseptic. One of his methods of experimenting was to have small sterilized dishes, in one of which was placed the germ and disinfectant, in a second a very weak solution of ammonium sulphide. After leaving the germ in dish No. 1 a given time, a portion was transferred to dish No. 2, and from this his tubes and plates were immediately made. Judging from my own experiments, he would have obtained different results had he left the germ for a longer time in the ammonium sulphide solution. True, he accomplished what he was aiming at, viz., the precipitation of the free sublimate, but it takes some little time for ammonium or hydrogen sulphide to dissolve or precipitate the mercury from the albuminate that is formed when sublimate comes in contact with albuminous bodies. This one can readily demonstrate by placing in a solution of ammonium sulphide a bit of cloth, or filter-paper, or still better egg-albumin, or a mass of anthrax-threads that have lain in sublimate for some time.

Abbott also recognized the danger of carrying over enough of the sublimate to act as an antiseptic. He avoided this by high dilutions. Both of these observers, however, failed to take into account the formation by the mercury of a compound with the material of the germ itself, and while their results show that sublimate does not deserve the place as a germicide that Koch gave it, they still leave it with a germicidal power far beyond its due. Geppert found that oftentimes he could kill animals with a germ treated with sublimate, when he could get no growth from the germ on any of his media. He could offer no satisfactory explanation of these cases. The experiments herein recorded will, I think, explain the cause of these discrepancies in his results.

Geppert's experiments show that the blood has the power of freeing the germ from this compound of sublimate (the proof of the existence of this compound I shall present further on), and his numerous and trustworthy experiments along this line have made it unnecessary for me to go over the ground again. From my experiments I should expect to find a marked difference in this power between the blood, the subcutaneous tissues, and serous cavities, and, indeed, Geppert and Gruber[1] found this difference. By introducing into the blood spore-threads that had been in the sublimate, Koch would have obtained results far different to those he obtained by introducing the spores beneath the skin of animals. The amount of sublimate carried along in combination with the thread and the contained germs would be enough to form an antiseptic pool for some distance around the thread, and while, nominally, the germ had been in contact with the germicide only a few minutes, in reality, before the slowly moving subcutaneous lymph could dissolve the compound of mercury, the germs would have been under its influence for hours or even days.

Abbott also would have found his results different had he used liquid instead of solid media. Bouillon, gelatin, agar, etc., have the power of slowly dissolving this organic compound of mercury, but, transfer a germ encapsulated by this mercurial compound to gelatin, and while the adjacent gelatin will slowly dissolve or decompose the compound, the result will be, if ever complete, that the germ is left lying in a pocket or pool of sublimate solution, which, if in sufficient quantity, may completely hinder its growth, although the germ is in nowise incapable of growing. Athough recognizing its advantages, I was loath to use bouillon in my experiments, because the argument of contamination is so applicable, and from the further fact that one surviving organism would give the same result as if hundreds had survived.

[1] A thesis submitted for the degree of Ph.D. in Michigan University.

[2] Geppert: "Zur Lehre von den Antisepticis," Berliner. klin. Wochenschr., 1889.

[3] Abbott: "Corrosive Sublimate as a Disinfectant against the Staphylococcus Pyogenes Aureus," Johns Hopkins Hospital Bulletin, April, 1891.

[1] Gruber: "Ueber die Methoden der Prüfung von Desinfektions-mitteln," Centralbl. f. Bacteriologie und Parasitenkunde, Bd. xi, Nos. 3 and 4.

The solutions of sublimate used in these experiments were made with chemical accuracy and were frequently renewed. They were kept in a dark closet in well-closed, glass-stoppered bottles. At no time were the solutions more than two weeks old. The salt used in most of the experiments was one made by Merck, but, in order to be safe in my conclusions, another preparation was obtained from a different source, and solutions made from this. Afterward a portion of the salt was recrystallized several times, and this in turn used. In these experiments I have for the most part employed very resistant germs, as the bacillus subtilis and the staphylococcus pyogenes aureus. Both of these are germs that withstand great extremes of temperature, are very resistant to desiccation and possibly to chemical agents.

The staphylococcus aureus was used because it is the germ against which our efforts at destruction are most often aimed. The bacillus subtilis was chosen as being a very resistant spore-former. In contrast with these, I have made a few experiments on germs that do not have any great power of resistance, such as the germ of swine-plague, Eberth's germ of typhoid fever, which it will be remembered, is speedily destroyed at a temperature of 60° C., and one of Dr. Vaughan's list of typhoid germs, the bacillus venenosus.

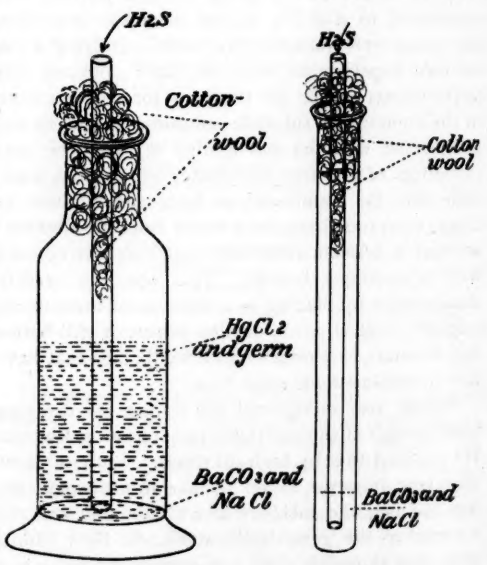
While it will be noticed that the highly resistant germs withstand the influence of the sublimate for many hours, it is also to be noticed that even those with but feeble powers of resistance, as the bacillus of Eberth and the bacillus venenosus, withstand its action for a comparatively long time.

As the anthrax-spore has been generally used as the test-organism in disinfection-experiments I began some work with it. The culture in the laboratory having been grown on artificial media for at least five years, had completely lost the power of spore-formation. Through the kindness of Dr. Abbott, of the Johns Hopkins University, I obtained a spore-forming culture of anthrax. In growing this I found that but few spores were formed, and I then attempted to restore its powers by growing it in the orthodox manner; and after passing it through animals, growing it in various kinds of dilute bouillon, and on potatoes for many generations, I at last obtained potato-cultures with a fairly abundant spore-formation. On testing these for the thermal death-point I was surprised to find that they succumbed to a temperature of 92° C. maintained for one minute. On this account I abandoned the bacillus of anthrax in my further experiments.

The variation in the power of resistance among anthrax-spores has long been known, but I suspect that it has not received the attention that it deserves from many experimenters with germicides. The fact that spores are formed, or that the culture is virulent for susceptible animals, does not mean that the experimenter has a resistant organism, as it is well known that even the sporeless anthrax-bacillus readily kills susceptible animals.

In my earlier experiments I used hydrogen sulphide to remove the sublimate, but I soon noticed variations in my results that I could not account for, these being more marked when I used 1 : 100 and saturated solutions of the sublimate. On reflection I was convinced that these variations might be due to the hydrochloric acid formed by the action of the hydrogen sulphide on the sublimate. A calculation of the amount of the acid formed showed that this inference was correct. After this I used sodium carbonate, sodium hydrate, or barium carbonate to neutralize the acid formed. In most of the experiments barium carbonate was used, it being insoluble in water and in general better than the alkaline salts, as the mercury is imperfectly precipitated except in neutral solutions. If the germ is to be used for inoculating animals the barium salt should not be used, as the barium chloride formed is itself highly poisonous. Noticing that the neutral

FIG. 1. FIG. 2.



salts, as sodium chloride, prevented the coagulation of albumins by sublimate, and that these, when so coagulated, were dissolved on the addition of the salt, I used sodium chloride in most of my experiments, in addition to the barium carbonate, in removing the sublimate.

In the first series of experiments recorded, the apparatus used (Fig. 1) was as follows: Into a bottle

with a capacity of about thirty c.c. was fitted a cotton-wool plug; passing through this plug and reaching to the bottom of the bottle was a glass tube, also plugged for several inches of its length with cotton-wool. In the bottle was placed a small quantity of barium carbonate, in the earlier experiments without, in the later with, sodium chloride. The apparatus was sterilized in the steam sterilizer. In the bottle was then placed a measured quantity of the sublimate solution and afterward a measured quantity of the germ-containing liquid. After a given time, the glass tube was connected with a Kipp's generator, and through it hydrogen sulphide passed. Then, with the platinum loop, three drops were removed from the bottle and placed in gelatin, which was then plated.

For convenience in handling and examining without contamination, Petri dishes were used exclusively. As the colonies were at times very slow in developing, the Petri plates were kept in moist chambers to prevent drying. In most of my experiments no attempt was made to determine how many of the germs were killed and how many survived. Such experiments have some scientific value, but are likely to be misleading. The fact that a control-plate shows one thousand colonies, while that exposed to the action of a disinfectant shows but fifty, gives but little insight into the question of disinfection. The few experiments that I have made in that direction seem to show that the majority of germs in any given culture are easily killed, and in looking over the experiments of others I find that this is confirmed.

EXPERIMENTS.

1891.

Nov. 12. One c.c. of bouillon-culture of the staphylococcus aureus, twenty-four hours old; twenty c.c. of sublimate, 1 : 200; time, thirty minutes; two Petri plates made.

Nov. 16. Many colonies.

Nov. 14. One c.c. of the same culture as the preceding; twenty c.c. sublimate, 1 : 200; time, sixty minutes.

Nov. 22. Many colonies.

Nov. 15. One c.c. of bouillon-culture of the bacillus subtilis, eleven days old; twenty c.c. of a saturated sublimate solution; time, thirty minutes.

Nov. 20. Few colonies.

Nov. 15. Two c.c. of subtilis culture; twenty c.c. of saturated sublimate solution; time, two hours.

Nov. 25. No colonies. (Very acid after H_2S, *i. e.*, not enough $BaCO_3$.)

Nov. 18. One c.c. of a culture of aureus; three c.c. of water; ten c.c. of sublimate, 1 : 200; time, sixty minutes.

Nov. 23. Many colonies.

Nov. 18. One c.c. of a culture of aureus; twenty c.c. of a saturated sublimate solution; time, forty minutes.

Nov. 26. No colonies.

Nov. 26. One c.c. of a culture of aureus; twenty c.c. of sublimate, 1 : 1000; time, fifty minutes.

Nov. 30. Many colonies.

Nov. 30. One c.c. of a culture of subtilis; twenty c.c. of sublimate, 1 : 200; time, sixty minutes.

Dec. 5. Two Petri plates were made; one had three colonies, the other had eight.

Nov. 30. One c.c. of subtilis culture; twenty c.c. of sublimate, 1 : 1000; time, twenty-three and one-half hours.

Dec. 5. Many colonies developed.

Nov. 28. One c.c. of aureus culture; twenty c.c. of sublimate, 1 : 200; time, seventy minutes.

Dec. 5. Many colonies developed.

Nov. 28. One c.c. of aureus culture; twenty c.c. of sublimate, 1 : 1000; time, eighteen and one-half hours.

Dec. 5. No colonies developed.

Dec. 10. Two colonies developed.

Nov. 25 One c.c. of aureus culture; twenty c.c. of sublimate, 1 : 200; time, sixty minutes.

Dec. 3. Hundreds of colonies developed.

Dec. 1. One c.c. of aureus culture; twenty c.c. of sublimate, 1 : 100; time, sixty minutes.

Dec. 7. Few colonies developed.

Dec. 5. One c.c. of subtilis culture; twenty c.c. of a saturated sublimate solution; time, seventy minutes. Two Petri plates were made.

Dec. 11. One dish had four, the other had ten colonies. (In this experiment sodium carbonate was used instead of barium carbonate.)

Dec. 5. A control-experiment was made to see if contamination was possible; no germ was employed, but all of the details of the other experiments were carried out.

Dec. 11. No colonies developed.

Dec. 8. One c.c. of swine-plague culture; twenty c.c. of sublimate, 1 : 1000; time, sixty minutes.

Dec. 12. Hundreds of colonies developed.

Dec. 8. One c.c. of swine-plague culture; twenty c.c. of sublimate, 1 : 200; time, sixty minutes.

Dec. 12. Many colonies developed.

Dec. 12. One c.c. of aureus culture; twenty c.c. of sublimate, 1 : 1000; time, eighteen and one-half hours. Two plates were made.

Dec. 14. On one four, on the other six colonies appeared.

Dec. 13. One c.c. of subtilis culture, filtered; twenty c.c. of a saturated sublimate solution; time, eighty-five minutes. Two Petri plates of agar were made and kept in an incubator.

Dec. 17. Many colonies developed.

Dec. 13. Control. No germ was employed, but all else was carried out as in the other experiments. There was no development.

1892.

Jan. 13. A fresh culture of staphylococcus aureus was obtained, and this was used in subsequent experiments.

One c.c. of aureus culture; twenty c.c. of sublimate, 1 : 1000; time, sixty minutes.

Jan. 17. Innumerable colonies had formed.

In order to show that it was not a mere question of free sublimate preventing the germ from growing, there were taken from the flask used in the last experiment, after the germ had remained in the sublimate sixty minutes and before the addition of H_2S, etc., three loopfuls, which were placed in a tube of bouillon. From this bouillon-

tube one loopful was removed to a tube of gelatin, and in turn one from this to a second gelatin tube; both tubes were plated.

Jan. 27. No development had taken place in either plate.

From this and other experiments I became convinced that the treatment with H_2S and sodium chloride did more than remove the free sublimate in the solution—that is to say, it seemed to me that here were proofs that the sublimate formed a chemical combination with the investing membrane or coat of the germ, and that this was not removed by the process of dilution or by washing. Schaefer[1] and Braatz[2] have pointed out that this is true for silk threads and catgut.

To test this conclusion I made the following experiments. Some egg-albumin was placed in sublimate, 1 : 1000, for thirty minutes; this was then placed on a filter and repeatedly washed with distilled water; the washing being continued long after the filtrate failed to give a precipitate with ammonium sulphide. To show that the free sublimate was removed, twenty drops were run into each of two bouillon-tubes containing about eight c.c. each. One of these tubes was inoculated with the bacillus subtilis, the other with the staphylococcus aureus; both gave luxuriant growths. Then a small quantity of the washed albumin, estimated at one-fifth of a c.c., was placed in a bouillon-tube and this was inoculated with the bacillus subtilis; this tube also gave an abundant growth. In still another tube was placed a quantity of the albumin, estimated at one c.c. This tube was placed in the incubator for sixteen hours and then inoculated with the staphylococcus aureus. No development followed.

A mass of anthrax-threads, grown in bouillon, was placed in 1 : 100 sublimate for thirty minutes; it was then placed on a filter and repeatedly washed. To show that free sublimate was removed, five c.c. of the filtrate were added to eight c.c. of bouillon and the tube inoculated with the staphylococcus aureus; it gave an abundant growth. A small quantity of the washed threads was placed in a bouillon-tube and a larger quantity in a second tube. Both tubes were inoculated with the staphylococcus aureus; the one containing the small quantity grew; the other remained sterile. The remaining portion of the threads was placed in a beaker with distilled water and ammonium sulphide added; the threads became intensely black from the precipitation of the contained mercury. Several days later the experiments were repeated with the egg-albumin and anthrax-threads, with similar results. Still other experiments were made with filter-paper, cotton cloth, and silk threads, all giving the same results.

The experiments show that the sublimate unites with the egg-albumin, with the cellulose of the cotton cloth and filter-paper, with the silk, and with some portion of the germ, as in anthrax, and that this is a chemical union, but that such fluids as bouillon can set free the contained sublimate, and this, if in sufficient quantity, will prevent any growth in the bouillon. In order to test this further, egg-albumin was treated with sublimate, and, having been freed from the free sublimate by continued washing, it was washed with 0.6 per cent. solution of sodium chloride. One, five, and ten drops of this filtrate respectively were added to tubes of bouillon and then inoculated with the staphylococcus aureus. The one with ten drops gave no growth, although inoculated a second time. Experiments with anthrax-threads gave the same results, *i. e.*, after treatment with sublimate, then washing, then being placed in one hundred and fifty c.c. of a 0.6 per cent. solution of sodium chloride, then sixteen hours in the incubator; five c.c. of this liquid placed in a tube of bouillon prevented the growth of the bacillus subtilis.

Again, a silk thread was placed in sublimate, 1 : 1000, for an hour; it was then throughly washed and cut into two pieces, one of which was placed in distilled water, the other in five c.c. of blood; both were placed in the incubator for one hour. Both were washed and then placed in a solution of ammonium sulphide. The portion that had been in water became intensely black, while that from the blood was not discolored.

In order to see if a 0.6 per cent. solution of sodium chloride could act as does blood in removing the sublimate from germs, one c.c. was removed from the flask that in the experiment of January 13th had for sixty minutes contained the germ and sublimate, 1 : 1000, before adding hydrogen sulphide, etc., and placed in one hundred and eighty c.c. of sterilized 0.6 per cent. solution of sodium chloride; after standing for one hour plates were made.

January 27th, no development had taken place.

1892.

Jan. 19. One c.c. aureus; twenty c.c. of sublimate, 1 : 100; time, thirty minutes.

Jan. 23. Innumerable colonies had developed. From the flask used in this experiment before the addition of hydrogen sulphide, etc., one-tenth c.c. was removed and placed in one hundred c.c. of sterilized salt solution; from this one plate was made after twenty minutes and one after sixteen hours.

Jan. 26. There was no development.

Feb. 24. One c.c. of aureus culture; fifty c.c. of sublimate, 1 : 1000; time, sixty minutes.

Feb. 27. Many colonies had formed.

[1] Schaefer: Berliner klin. Wochenschr., 1890.

[2] Braatz: Centralbl. f. Bacteriol. und Parasitenkunde, Bd. viii, No. 1.

Before adding hydrogen sulphide, etc., dilutions were made from the foregoing, so that the plates contained less than 1 : 50,000,000 sublimate.

Mar. 4. Four colonies had formed.

Feb. 24. One c.c. of aureus culture; fifty c.c. of sublimate, 1 : 100; time, sixty minutes.

Feb. 27. One hundred and eighty colonies had formed.

After the plate was made, the apparatus containing the germ, sodium carbonate, hydrogen sulphide, etc., was placed in the incubator for twelve hours and then a second plate made.

Feb. 27. Thousands of colonies had formed.

As it is improbable that the germ would multiply, at least to any considerable extent, in this combination of salts, both on account of lack of food-material and for the further reason that the hydrogen sulphide, and possibly the salts, would have a retarding influence on its multiplication, the conclusion seems warranted that the difference in the number of colonies on plates No. 1 and No. 2 was due to the fact that the incubator temperature and the prolonged action of the hydrogen sulphide and the salts had liberated many more germs from the sublimate than in the case of the first plate.

From the second flask of Feb. 24, before the addition of hydrogen sulphide, etc., dilution-tubes were made, the plates containing less than 1 : 10,000,000 sublimate.

Mar. 1. No development had taken place.

Control-plates were made at the same time as the other plates of Feb. 24, *i. e.*, one c.c. of aureus cultures; fifty c.c. of water.

Feb. 27. Innumerable colonies had formed.

In the succeeding experiments a modification of the apparatus previously in use was made. The germ was placed in a sterilized Erlenmeyer flask plugged with cotton-wool, and into this was placed the required amount of sublimate solution. From time to time one c.c. was removed with a sterilized pipette from this flask and placed in a test-tube containing a small quantity of barium carbonate and sodium chloride. This test-tube (Fig. 2) contained a plug of cotton, through which passed a small tube also plugged. This small tube passed to the bottom of the test-tube. The test-tube and contents were, of course, thoroughly sterilized in the steam sterilizer before being used. After adding the one c.c. of germ and sublimate, a stream of hydrogen sulphide was passed through the small tube; then three drops of the liquid were removed with the platinum loop and placed in gelatin, which was then plated.

The cultures of staphylococcus aureus used from this time on were treated as recommended by Geppert,[1] *i. e.*, they were grown in bouillon, in a flask containing sand, the continued shaking of which tended to hinder the formation of clumps. The culture was afterward filtered not less than twice through several inches of glass-wool contained in an Allihin tube. By this means all of the larger clumps were removed, but the microscope showed that there still remained small aggregations of the germ, although invisible to the eye.

Feb. 24. One c.c. of aureus culture; fifty c.c. of sublimate, 1 : 1000; time, sixty minutes.

Mar. 1. Nine colonies had formed. (Sodium hydrate was employed instead of barium carbonate.)

Before the addition of sodium hydrate or hydrogen sulphide a portion was taken from the foregoing and diluted until the plate contained less than 1 : 50,000,000 sublimate.

Mar. 1. Three colonies had formed.

Feb. 24. One c.c. of aureus culture; fifty c.c. of sublimate, 1 : 100; time, sixty minutes.

Feb. 27. One hundred and eighty colonies had formed.

Before adding H_2S, etc., one c.c. was taken from the foregoing and diluted until the plate contained less than 1 : 10,000,000 sublimate.

Mar. 1. No development had taken place.

Control from the foregoing culture of aureus, one c.c. in fifty c.c. of water.

Feb. 27. Innumerable colonies had formed.

In the following experiments a culture of staphylococcus aureus, twenty days old, was used. It was grown with sand and filtered as usual.

Mar. 1. One c.c. of aureus culture; fifty c. c. of sublimate, 1 : 100.
Time thirty minutes.

Mar. 4. Innumerable colonies had formed.
Dilution plates made as usual.

Mar. 4. No development had taken place.
Time sixty minutes.

Mar. 4. Numerous colonies had formed.
Dilution plates after sixty minutes.

Mar. 4. No development had taken place.
Time ninety minutes.

Mar. 4. Many colonies had formed.
Dilution plates after ninety minutes.

Mar. 4. No development had taken place.
Time two hours.

Mar. 4. Innumerable colonies had formed.
Dilution plates after two hours.

Mar. 4. No development had taken place.

One c.c. of aureus culture; fifty c.c. of sublimate, 1 : 1000; time, thirty minutes. Innumerable colonies formed.
Dilution plates (March 4). No development took place.

Mar. 1. One c.c. of aureus culture; fifty c.c. of sublimate, 1 : 1000; time, sixty minutes.

Mar. 4. Innumerable colonies had formed.
Dilution plates (March 4). No development took place.

Mar. 1. One c.c. of aureus culture; fifty c.c. of sublimate, 1 : 1000; time, ninety minutes.

Mar. 4. Many colonies had formed.
Dilution plates (March 4). No development took place.

Mar. 1. One c.c. of aureus culture; fifty c.c. of sublimate, 1 : 1000; time, two hours.

Mar. 5. Many colonies had developed.
Dilution plates (March 5). No development took place.

[1] Geppert: "Zur Lehre von den Antisepticis," Berliner klin. Wochenschr., 1889.

In making the dilutions, one loop of the germ and sublimate was placed in a tube of bouillon containing eight c.c.; from this, one loop was removed and placed in a tube of gelatin. If the loop held one one-thousandth of a cubic centimeter, which was approximately its capacity, the sublimate in the plates from the 1 : 100 would be 1 : 6,400,000,000; in those made from the 1 : 1000, the plates would contain 1 : 64,000,000,000.

Mar. 9. One c.c. of aureus culture; fifty c.c. of sublimate, 1 : 1000; time, thirteen hours.
Mar. 13. Thirteen colonies had formed.

It occurred to me that if sodium chloride prevented the coagulation of albumin by sublimate, a solution of the double chloride of mercury and sodium or a mixture of the two salts should prove a better germicide than sublimate alone. In order to test this, several experiments were made, but the results failed to confirm my hypothesis.

Mar. 14. One c.c. of aureus culture; forty c.c. of sublimate, 1 : 100; twenty c.c. of a 10 per cent. solution of sodium chloride.
Mar. 16. After thirty minutes, innumerable colonies had formed; after forty-five minutes, innumerable colonies had formed; after sixty minutes, innumerable colonies had formed.
At the same time and from the same culture of aureus, one c.c. was added to sixty c.c. of sublimate, 1 : 100.
Mar. 16. After thirty minutes, innumerable colonies had formed; after forty-five minutes, innumerable colonies had formed; after sixty minutes, innumerable colonies had formed; after twelve and one half hours, ninety-eight colonies had formed; after fifteen hours, there was no development.

In the case of the fifteen-hour plate, ammonium sulphide alone was used, instead of the usual method. In order to test the effect of having more albuminous material present, a companion set of experiments to the foregoing was made with the same culture of the staphylococcus aureus, but grown in gelatin. Both cultures were grown in the incubator for five days. The gelatin was, of course, liquefied by the germ.

Mar. 14. One c.c. of aureus culture (in gelatin); forty c.c. of sublimate, 1 : 100; twenty c.c. of a 10 per cent. solution of sodium chloride.
After twelve and one-half hours (March 19), very many colonies had developed; after fifteen hours (March 19), two hundred colonies had formed; after thirty-six hours, (March 19), no development had taken place.
Mar. 18. One c.c. of bouillon-culture of the bacillus subtilis; fifty c.c. of sublimate, 1 : 1000.
After four and one-half hours (March 22), very many colonies had developed; after eighteen hours (March 22), forty colonies had formed; after twenty-four hours (March 22), forty-two colonies had formed; after forty-two hours (March 22), no development had taken place.

A second set of experiments comparing the culture grown in the ordinary way, *i. e.*, in bouillon with sand and then filtered, with that grown in gelatin was made. Both cultures were eight days old.

Mar. 18. One c.c. of aureus culture (in gelatin); fifty c.c. of a saturated solution of sublimate.
After sixty minutes (March 23), no development had taken place; (March 27), three colonies had formed; after four hours (March 27), no development had taken place; after eleven hours (March 27), no development had taken place.

One c.c. of a bouillon culture of the staphylococcus aureus; fifty c.c. of a saturated solution of sublimate.
After sixty minutes (March 25), no development had taken place; (March 27), four colonies had formed; after four hours (March 25), no development had taken place; after eleven hours (March 25), no development had taken place.

One c.c. of aureus culture (in gelatin); fifty c.c. of sublimate, 1 : 100.
After sixty minutes (March 23), no development had taken place; (March 24), very many colonies had formed; after four hours (March 23), no development had taken place; (March 24), many colonies had formed; after eleven hours (March 23), no development had taken place; (March 26), fourteen colonies had formed; (March 27), twenty-one colonies had formed.

One c.c. of bouillon culture of the staphylococcus aureus; fifty c.c. of sublimate, 1 : 100.
After sixty minutes (March 23), innumerable colonies had formed; after four hours (March 23), many colonies had formed; (March 24), innumerable colonies had formed; after eleven hours (March 23), no development had taken place; (March 27), no development had taken place.

One c.c. of aureus culture (in gelatin); fifty c.c. of sublimate, 1 : 1000.
After sixty minutes (March 23), innumerable colonies had formed; after four hours (March 25), innumerable colonies had formed; after eleven hours (March 25), no development had taken place; (March 26), one hundred and fifty colonies had formed.

One c.c. of aureus culture (in bouillon); fifty c.c. sublimate, 1 : 1000.
After sixty minutes (March 25), very many colonies had formed; after four hours (March 25), no development had taken place; (March 26), there were too many colonies to count; after eleven hours (March 24), no development had taken place; (March 26), many colonies had formed.

(To be concluded.)

The Royal Academy of Medicine of Rome offers the Riberi Prize of 20,000 francs ($4000) for a report of the most notable discovery in anatomy, physiology, pathology, or pharmacology, made in the quinquennial period from 1892 to 1896. The report must be presented in Italian, French, or Latin, and be submitted before December 31, 1896.

HYDRO-NAPHTHOL IN THE PROPHYLAXIS AND TREATMENT OF CHOLERA: REPORT OF LABORATORY EXPERIMENTS.

BY D. D. STEWART, M.D.,
CLINICAL LECTURER ON MEDICINE IN THE JEFFERSON MEDICAL COLLEGE.

IN a preliminary note as to the prophylaxis and treatment of cholera, published in THE MEDICAL NEWS of September 17th, I suggested the use of hydro-naphthol both as a preventive and as a remedy for the developed disease, it having occurred to me, from several years' experience with this drug in intestinal affections of bacterial origin, that it would probably fulfil the indications of antiseptic and germicide far better than salol. It will be remembered that salol has lately been rendered somewhat popular as a cholera remedy through the writings of Löwenthal, who discovered that it possessed toxic power over comma-spirilla, under the influence of pancreatic juice, which dissociated it into its components, salicylic acid and phenol. It occurred to me that the latter, which exists in salol in the proportion of 36 per cent., was in all probability the active agent, as it is, of course, a far more efficient germicide than the former, and on comma-spirilla has an especially lethal effect, as these perish in a one-half per cent. solution, as was shown by Koch.

As I pointed out, the experiments of Löwenthal, though interesting and demonstrating the effect of nascent phenol on comma-spirilla in the test-tube, are unfortunately, of little practical utility, for the reason that it is not in the duodenum but in the lower part of the ileum that the contagium finds lodgment and exerts its specific effect. Salol undergoes decomposition in the upper part of the jejunum, and is there promptly converted into soluble, *absorbable*, and very questionable antiseptic salts, sodium salicylate and carbolate, little undecomposed salol reaching the lower segment of the bowel, unless the intestinal contents are abnormally acid or the drug is ingested in doses the effect of which would be very injurious.

A remedy to be directed with effect against the contagium of cholera should be a more or less ideal intestinal antiseptic; it should be but slightly soluble and decomposable, yet a germicide in aqueous solution, and both non-toxic and non-irritant in doses sufficient to produce a germicidal action. Experiments with naphthalin as an intestinal antiseptic, clinical and laboratory, have been disappointing. In recent years it has almost ceased to be used, hydro-naphthol or beta-naphthol[1] taking its place.

It occurred to me that hydro-naphthol would perhaps fulfil the desired indications. It had been found of signal service in intestinal affections, especially in those of bacterial origin. It is related to phenol, being, like it, a benzol derivative; hence, presumably, cholera-spirilla might also be vulnerable to it. It is but slightly soluble in aqueous solutions, is non-irritant and non-poisonous, and does not readily undergo decomposition; it would, therefore, be carried unchanged to the affected part of the bowel, even in moderate doses, without absorption occurring. To determine its actual value as an antiseptic and germicide in cholera, I asked Dr. Ghriskey, of the Laboratory of Hygiene, University of Pennsylvania, to undertake some experiments as to its influence on pure cultures of comma-spirilla. The following is a brief account of the result; the details of the experiments are to be subsequently published, embodied in the annual report of the Hygienic Laboratory work:

THE LABORATORY OF HYGIENE,
UNIVERSITY OF PENNSYLVANIA.
September 23, 1892.

DR. DAVID D. STEWART,

DEAR DOCTOR: The laboratory experiments to determine whether hydro-naphthol possesses any antiseptic or germicidal action against the Asiatic cholera-spirillum of Koch, which were undertaken at your request, have been completed, and we herewith send you a report of the results obtained. The pure cultures of the organism used in our experiments were derived from one originally secured from the Bureau of Animal Industry, Washington, D. C. In its morphology and behavior in nutritive culture-media it was shown to be identical with the comma-spirillum of Koch, though we cannot vouch for its virulence.

We found in a series of experiments, repeated with constant results, that in solutions of a strength of 1 part hydro-naphthol and 7000 parts nutritive culture-medium, the drug proved to be distinctly antiseptic. It was also demonstrated that with a mixture of equal parts of a saturated aqueous solution of hydro-naphthol and a bouillon-culture of this organism, the drug was germi-

[1] Beta-naphthol and hydro-naphthol, which in their powdered condition are very similar in physical appearance, are regarded by some chemists as identical bodies. This, however, would appear not to be the case, there being a number of points of distinction between them. Hydro-naphthol is said to possess a different molecular arrangement from beta-naphthol, from which it is derived by the substitution of a molecule of hydroxyl (OH) for an atom of H. While naphthalin ($C_{10}H_8$) is formed by the union of two benzol groups saturated with hydrogen, beta-naphthol ($C_{10}H_7(OH)$) may be stated to equal naphthalin in which a molecule of hydroxyl has been substituted for an atom of H. Hydro-naphthol would represent naphthalin in which two molecules of hydroxyl are substituted for two atoms of H. Beta-naphthol, which is probably by no means as toxic and unsafe for internal administration as Seabury and Johnson assert, will perhaps also be found of value in cholera. Dr. Ghriskey is now investigating its action on comma-spirilla for me. It is, like hydro-naphthol, unquestionably a valuable intestinal antiseptic. M. Bouchard's experiments with it (see *N. Y. Medical Record*, Dec. 12, 1887, p. 797) indicate that it is only toxic in enormous doses, being less so than naphthalin, the much weaker antiseptic. Bouchard found that a lethal dose for a man of 130 pounds avoir., was about 250 grams (equivalent to a half-pound). Toxic effects (albuminuria, spasmodic muscular contractions, salivation, and coma) were produced only when naphthol was ingested in doses of about 26 grams.

cidal within five minutes. In this series the results were invariably the same.

Two samples of hydro-naphthol were employed by us: the one which you sent us, another sold by Seabury & Johnson, N. Y. The solubility, determined by the usual method, showed some variance in the two preparations; in general, we found the solubility to be in the proportion of from 1 part in 1000 to 1 part in 900 of cold distilled water.

In so far as the experiments of the *antiseptic* value of hydro-naphthol are concerned, they are corroborative of results obtained by Abbott and published by Fowler, of Brooklyn, N. Y., in 1885. These experiments were made with the bacillus anthracis and the bacillus subtilis. Both are known to be far more resistant to antiseptic and germicidal agents than the comma-spirillum, which is an organism classed among those least resistant. The results of the *disinfective* action of hydro-naphthol do not coincide with the results obtained by Abbott. This may in part be explained by the nature of the organisms with which the work was done, but more probably was due to the improvements in the technique of the experiments as practised to-day over the methods used at the date of Abbott's experiments.

Very truly yours,

ALBERT A. GHRISKEY, M.D.,
Assistant in Bacteriology.

The foregoing report indicates that I was correct in my surmises regarding the probable value of hydro-naphthol, both as a prophylactic agent and as a remedy for developed cholera. It would appear, indeed, that we very likely have in it a medicament of extraordinary value, for it has thus been actually demonstrated beyond question that a proportion as high as one to seven thousand has an undoubted inhibiting effect on the development of the comma-spirillum, and that a proportion of about one to two thousand (equal parts aqueous solution and culture medium) exerted a prompt germicidal action.[1] As one part to seven thousand equals about a grain to the pint, or to the avoirdupois pound, and as the contents of the small intestine, when the latter in its entire length is thoroughly distended, cannot amount to more than nine or ten pints, it would follow that, under any condition, but ten grains of hydro-naphthol, if in solution, would be required to render the entire small intestine antiseptic against the comma-spirillum, preventing its development, while about forty grains, under similar conditions, would disinfect the intestine, promptly killing any spirilla present. Despite these calculations, it is, of course, somewhat difficult to accurately formulate the exact dose necessary to create immunity against cholera, or that sufficient to exert a bactericidal effect in cases of the developed disease. Fortunately we have in hydro-naphthol one that is non-toxic in doses probably much larger than would be sufficient for the latter effect. In cases of simple diarrhea, in dysentery, and in enteric fever, I have frequently administered a half-dram in the twenty-four hours, continuing this often for weeks, totally without effect other than beneficial, and it is quite certain that doses much larger than these may be similarly used. The slight inhibition of gastric digestion that hydro-naphthol produces is readily obviated by the administration of the latter in keratin-coated pills, which are soluble in the duodenum, or if the drug is ingested in powder, capsule, wafer, or emulsion, by taking it between meals. It is without effect on duodenal digestion.

As a prophylactic against cholera when, from exposure, the disease seems imminent, hydro-naphthol should be taken in doses of from eight to ten grains four times daily for three or four days, and, subsequently, in from five- to eight-grain doses with the same frequency. This amount will probably at once exert an antiseptic effect, and at the expiration of twenty-four hours be germicidal. In early choleraic diarrhea it should be used in quantities of ten grains hourly, or even half-hourly, until from one to two drams have been taken. Here it may be, and, indeed, by choice, should be, combined with an opiate. An overwhelming testimony exists as to the extraordinary benefit likely to accrue from a prompt resort to opium in the stage of preliminary diarrhea, Sir George Johnson's most dangerous theoretic views to the contrary notwithstanding. The extended experience of Sir Thomas Watson, Fergus, of Glasgow; Aitkin, Macpherson, Twining, Parkes, our own Flint, Sr., and many others who have passed through several epidemics, leaves no doubt as to the great utility of opium. Nevertheless, as pointed out in my former paper, treatment by opium is only symptomatic, for this drug can neither destroy the comma-bacillus nor retard its development. Opium apparently acts in early choleraic diarrhea by checking the bowel-irritation caused by the spirillum or its leukomaïne. If, conjointly, a second remedy can be administered that will have a lethal effect on the spirillum the ideal treatment of cholera, at least in its early stage, has been found.

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[1] Time did not permit carrying the experiments farther, to ascertain if a less percentage of hydro-naphthol is germicidal. This is now being done. The result will be published subsequently with the results of a study of beta-naphthol.

Gunshot Wound of the Gall-bladder; Cystorrhaphy.—KEHR (*Centralblatt f. Chirurgie*, No. 31, p. 645) has reported the case of a man, thirty years old, who received a perforating wound of the abdomen, inflicted by a revolver bullet. When the abdomen was opened, it was found that the gall-bladder had been lacerated, and the abdominal cavity contained blood and bile. The opening in the bladder was closed by deep and superficial sutures, and the fluid in the abdomen removed by means of sponges. The subsequent course of the case was practically uneventful. Twenty-four hours after the operation, transitory jaundice appeared. Four weeks later, the patient was dismissed, well.

STOMATITIS DUE TO THE IRRITATION OF EPITHELIAL PEARLS IN THE MOUTHS OF NEWBORN CHILDREN.[1]

By HENRY J. GARRIGUES, M.D.,
of New York.

Scarcely had I gone on duty last spring in the Maternity Hospital before we had a little epidemic of sore mouths among the children, which presented peculiar features that awakened our interest and made us examine every child in the wards very attentively.

The first case to which my attention was called presented a superficial ulcer, covered with a yellow film and bounded by a red line, occupying nearly the whole soft palate, and extending symmetrically on both sides of the median line. As the child had no fever, and, upon the whole, appeared to enjoy excellent health, a diphtheritic infection, which at the same time attacked the eyes of several babies, could be excluded. A microscopic examination of the yellow mass covering the ulcer showed only pus-corpuscles and the common pyogenic micrococci.

The history of the case was that on the second day after the child's birth a small, white spot, like a millet-seed, was seen in the median line at the junction of the soft and hard palate, which spread symmetrically, until, in the course of three days, it covered the soft palate.

It was evidently some local infection. I had it swabbed with water acidulated with acetic acid and painted with a solution of borax in glycerin—a dram of the former to an ounce of the latter. The sore healed from the periphery to the center, and when the child was dismissed, on the twenty-sixth day, its mouth was clear.

In another case, immediately after birth, a white spot, pea-sized, was noticed at the junction of the right tonsil and palate, which, on account of its position and size, I suppose was only the white or yellowish spot corresponding to the neighborhood of the hamular process of the sphenoid, which is likely to become the seat of an ulceration called "Bednar's aphthæ." The mucous membrane is here only half as thick as in the other parts of the mouth. The pterygo-maxillary ligament extends from the hamular process to the spine in which the internal oblique line ends inside of the inferior dental foramen on the inside of the lower jaw, and stretches this part of the mucous membrane when the mouth is opened. As the hamular process forms a prominence, the back of the tongue is pressed with particular force against it when the child nurses. All of these pecularities explain why this spot is more vulnerable than most other parts of the mouth.

On the fourth day a white streak was seen extending in the median line from the hard palate to the root of the uvula, and on the following day the original lateral spot became united with this median line, forming a triangular ulceration, taking in the left side of the soft palate and the palatal arches of the same side. It looked entirely like diphtheritic infiltration, but the temperature never rose beyond 99.4°, no glands were swollen, and the child certainly was not seriously ill.

On the seventh day a similar ulcer formed on the right side, corresponding to the original spot on the left. When the child left the hospital on the twenty-third day the mouth was nearly healed, clearing up from the periphery to the center.

I mention these two cases especially, because, in my opinion, they represent two different types—the first ulceration having originated in an epithelial pearl; the second, in the weak spot covering the hamular process of the sphenoid.

We examined in all fifty-two babies, and soon found that nearly all had one or more white nodules on the palate at their birth. The first twenty-seven of these children had their mouths washed out immediately after birth and after each nursing, with the velvety side of a piece of lint soaked in a saturated solution of boric acid. Of these, twelve had a more or less sore mouth, the ulceration always beginning at the epithelial pearls, with the exception of the one case of Bednar's aphthæ. In the last twenty-five cases we desisted from all washing out, so that nothing but the mother's nipple and her milk entered the mouth; and of these babies not a single one got a sore mouth.

The pearls were found in all but three of the fifty-two, and to these I may add five cases of my private practice, four of which had them, which makes a total of fifty-seven cases; fifty-three of which, or 93 per cent., had congenital epithelial pearls.

These epithelial pearls are small, white, globular tumors, varying in size from that of a pin-head to that of a millet-seed, situated in the raphe of the palate, preferably at the juncture of the hard and the soft palate. Sometimes there is only one; in other cases from two to five. The outer surface is almost cartilaginous, while the interior is filled with a softer mass. They are imbedded in the mucous membrane of the mouth, the larger reaching from the epithelium, in which they may even produce a depression, to the periosteum. Most have a covering of condensed subepithelial connective-tissue, which merges into the surrounding tissue without any distinct line of demarcation. Sometimes, instead of the round prominence, we find a white line extending as much as half an inch in the direction of the raphe.

Microscopic examination shows that the whole

[1] Read before the American Gynecological Society—Seventeenth Annual Meeting, held in Brooklyn, N. Y., Sept. 20, 1892.

mass is composed of epithelial cells like those of the mucous membrane of the mouth. The outer layers are the youngest, as appears from their polyhedral form and the presence of a nucleus; while those placed near the center are flat and have lost their nuclei, just as the case is with the superficial epidermal cells compared with those of the rete Malpighii.

Similar formations are sometimes found on the free edge of the alveolar process, especially near the posterior extremity.

Older authors have taken these formations for retention-cysts and called them *milium*, but Epstein,[1] who has made a thorough investigation of them from the time of their first appearance in the fetus, is probably right in rejecting all connection between them and glands. He has found them as early as the eighth week of fetal life, while the glands of the mouth do not begin to be developed before the fourth month. They are always situated in the median line, while the glands begin at some distance from it, leaving a strip of tissue free on either side of it. They are also often situated on a deeper level than the glandular layer. They are transient organs, which in healthy children disappear at the end of the second month. In badly nourished children, however, the process of involution takes more time. After the fifth month Epstein has not found them externally, but imbedded in the mucous membrane they may be found a whole year after the birth of the child.

According to the author named, these pearls are due to a kind of invagination of the epithelium, and the reason why they are found in just that particular place is that the palate is formed by two lateral projections, which gradually unite in the median line from the front backward.

As to their appearance on the alveolar process, Epstein refers this to a similar inclusion of epithelium taking place when the walls of the dental furrow grow together over the germs of the future teeth. He has, therefore, given them the name of *epithelial pearls*.

In our cases the pearls, if they did not give rise to stomatitis, had disappeared already within a week or two. Several nodules were seen to melt together, and then to clear up and gradually disappear. By following them day after day, we have also been able to see that new ones may appear after the birth of the child.

As to diagnosis, they are easily distinguished by their definite locality and their regular, round globular shape. Bednar's ulcer always develops laterally, and usually bilaterally on the place corresponding to the hamular process of the sphenoid. Sprue forms small, irregular, less elevated white spots, which are never congenital and are found in any part of the buccal membrane, without any symmetrical distribution.

In regard to treatment, we must remember that the epithelial pearls being physiologic formations, destined to a spontaneous disappearance, do not call for any treatment, and that all we have to do is not to injure them. If an energetic nurse takes them for sprue and rubs them off, mischief is likely to follow. In our case we stopped the time-honored washing out of the mouth of the children, and not one of those thus treated, or rather not treated, got stomatitis. If, however, a child has got liquor amnii, blood, or other extraneous matter into its mouth, I do not see any objection to washing it, either with plain water, which I use in private practice, or with a saturated solution of boric acid, which in some manner had found its way into the routine treatment in the Maternity Hospital, but the washing should be very superficial, and performed with a smooth, soft rag (an old fine pocket handkerchief answers admirably), great care being taken not to injure the epithelium anywhere.

If stomatitis has developed it should be treated as similar affections usually are. Our cases were swabbed with hydrogen dioxide, 1 part diluted with 1 or 2 parts of water; potassium chlorate, 1 part to 32 or 48 parts of water; saturated solution of boric acid; and, what proved best of all, water acidulated with a few drops of acetic acid, followed by painting with 1 part of borax dissolved in 8 parts of glycerin.

As I did not visit the hospital more than two or three times a week, I am indebted to the house-surgeon, Dr. T. R. Carter, for many details in the observation of the cases that form the basis of this communication.

[1] Alois Epstein: Zeitschrift für Heilkunde, vol. i, p. 59, Prag, 1880.

GYROSPASM OF THE HEAD IN INFANTS.

BY FREDERICK PETERSON, M.D.,
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A PECULIAR rotary spasm of the head, and sometimes a nodding spasm, is met with in young children, but is a somewhat rare disorder. Henoch has described it in his book on *Diseases of Children*. Not long ago Dr. Haddon[1] gave the details of five or six cases that had come under his observation, with references to several others. I will first briefly relate five cases that I have seen: two at the Polyclinic, in conjunction with Dr. Sachs; two at the Vanderbilt Clinic, with Dr. Starr, and one in Buffalo, with Dr. Snow.

[1] Lancet, June 14, 21, 28, 1890.

CASE I.—E. T., a female child, eight months old, came to the Polyclinic, March 25, 1890. She was the second child. The labor had been normal. The child tumbled out of bed at the age of five months. One month later she began to have constant movements of the head from side to side. The child was bright-looking. There was at one time, according to the mother, a slight nystagmus, but none at my examination. Treatment was carried on for a month without much improvement, but the child subsequently recovered.

CASE II.—M. U., a male, nine months old, came to the Polyclinic, October 28, 1890. For five months he had had a rotary movement of the head. When the child was perfectly quiet, the head kept oscillating from right to left and from left to right at the rate of from eighty to one hundred oscillations per minute. The movement was, however, not constant; pauses of several minutes' duration occurred; and when the child's attention was attracted to some object the movement ceased as long as the mind was concentrated and interested. There was lateral nystagmus of the right eye alone, which also had the peculiarity of temporarily ceasing for minutes at a time. The patient had measles two months previously; there was no history of convulsions or of a fall. The head had presented in labor, which had been normal. The general health was good.

CASE III.—F. C., a female, nine months old, came to the Vanderbilt Clinic, May 14, 1888. The child was in good general health, although nursed by an anemic mother. Six months previously she had fallen out of bed, and very soon afterward began to have a movement of the head from side to side. When the child's attention was attracted, the rotation ceased, but otherwise it was continuous. There was convergent strabismus, but no nystagmus.

CASE IV.—J. C., a male eleven months old, came to the Vanderbilt Clinic in 1889. He was born healthy, of a primipara; the labor had been difficult. The child had spasms when a few days old. It was bright and healthy-looking. At the age of eight months the mother first noticed a continuous lateral rotation of the head. When occupied with any object, such as a watch or a key, the movement ceased. There was no nystagmus.

CASE V.—A. C., a male, nine months old, was seen with Dr. Snow, June 25, 1890. At the age of seven months he had had a fever, with convulsions and retraction of the neck, lasting nine days. Soon after this the mother remarked a rapid continuous motion of the head from side to side, which ceased during sleep and while nursing. There was no nystagmus.

All of these cases were treated with potassium bromide, in doses of from one and one-half to three grains, and all were more or less improved—in several to such a degree that the children were not brought again after a few weeks of medication.

These are the main points of my cases. There seemed to be little else the matter with the infants. I would call attention to the following features of cases thus far reported:

Age. Of the ten cases described by Hadden and myself, seven were under ten months of age and the other three under fifteen months. The disorder would, therefore, seem to be one of early infancy, though Henoch reports a case in a child three years old.

Character of the movement. In all of my cases the motion was distinctly and solely from right to left and left to right; in other words, a rotary spasm, or gyrospasm, as I think proper to call it. The title of Hadden's paper, however, refers to other forms of head-movement, "On Head-nodding and Head-jerking in Children, Commonly Associated with Nystagmus." Sometimes there was nodding simply, sometimes both nodding and lateral movements, and again only rotary spasm. Henoch says: "In many cases I have found the rotating movement by far the most marked, and the nodding very slight." I have noted cessation of the spasm during sleep, and, as recorded, whenever the attention of the child was drawn to any particular object, so as to interest it.

Association with nystagmus. In only one of my five cases did I observe nystagmus, and that was lateral and monocular. In another case the mother claimed to have seen it, but I could not corroborate this. In three of Hadden's cases, three of Henoch's, and one of Norrie's[1] there was monocular nystagmus, but, according to the first-named author, double nystagmus is more frequent. From my own experience I should not be inclined to look upon nystagmus as a condition usually associated with the gyrospasm and spasmus nutans of infancy, but as an occasional concomitant. When present, it may be monocular or binocular, and lateral, vertical, or rotary. It seems to occur at times in infants by itself, as a sole symptom, doubtless of a pathologic condition similar to that which underlies the gyrospasm.

Strabismus. In one of my cases there was convergent strabismus, and Henoch, Hadden, and Gee[2] each report a similar instance.

Exciting causes. Henoch looks upon dentition as a cause, and the age of early dentition at which the disorder usually appears would seem to favor his view. At the same time, my own cases would hardly support his idea, for in one it began at three months, in one at four, and in one at five, and in the two others at seven and eight months, respectively. Head-injury preceded the appearance of the spasm in three of Hadden's cases, and in two of my own a fall out of bed seemed to have occasioned the malady. Perhaps concussion of some kind may be found in most of the cases to be the determining factor—a concussion setting up in the centers of the spinal

[1] Centralb. f. prakt. Augenheilk., 1888, p. 229.

[2] St. Bartholomew's Hospital Reports, vol. xxii, p. 26.

accessory and at times in those of the oculo-motor nerves an arhythmic discharge. We know that in adults concussion of the brain, if severe, may quite suddenly give rise to a rapid, though temporary nystagmus.

Prognosis and treatment. The organic basis of the disease usually being of a slight nature, the prognosis may, as a rule, be considered very favorable. Treatment with potassium bromide, in doses of from one and one-half to three grains three times daily, will certainly ameliorate and generally cure these cases. Even without treatment, gyrospasm and the nodding form of movement are likely to disappear in a few months or years.

201 WEST FIFTY-FOURTH STREET

THE ENZYMES OF SOLUBLE FERMENTS OF THE HOG-CHOLERA GERM.[1]

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IN the *Archiv für Hygiene*, 1890, vol. x, pt. 1, p. 1, Fermi describes the detection and isolation of soluble ferments from the cultures of a number of different germs. Some of these germs belong to the class that produce gas (principally CO_2 and H) when grown in media containing glucose or glucose-forming substances, and as a rule the gas-producing germs when cultivated upon proper media have been found to be ferment-builders.

As has been shown by Smith and other investigators, the hog-cholera germ produces large quantities of gas when grown in peptonized beef-broth containing 2 per cent. of glucose. About one-fourth of this volume is hydrogen and three-fourths carbon dioxide, the remaining liquid containing acetic and succinic acids, as I have found by analysis.

To detect and isolate the soluble ferments of the hog-cholera germ, if any, several different culture-media have been tried, but the one that has given the most satisfactory results is sterilized milk. In plain peptonized beef-broth media but very small amounts of these ferments were produced, sometimes none.

Upon agar-agar the growth of the germ is rapid, and from the watery extract of the surface-growth a mixture of two ferments has been obtained that will convert starch into glucose and liquefy gelatin—in other words, ferments that act as diastase on the one hand and as trypsin on the other.

If now we take either skimmed or fresh milk, carefully sterilize it, and then inoculate it with the hog-cholera germ, after about three weeks the milk has become thin and watery in appearance, a curd-like coating has formed on the surface, and the reaction, if the growth has been normal, has become either neutral or alkaline. The germs may now be removed by filtering the milk through a carefully sterilized Pasteur tube, or they may be killed by heating the solution to 54° C. for several hours, or still better, by the addition of a saturated solution of thymol.

From the cultures sterilized in this way the addition of absolute alcohol throws down a voluminous precipitate consisting of albumose, a little peptone and soluble enzymes.

A purification of this precipitate and partial separation of enzymes from the accompanying albuminoid matter is attained by a re-solution in water and precipitation with basic calcic phosphate. The enzymes are carried down mechanically by this, and can be dissolved out by water and reprecipitated with alcohol. After repeated treatment of this sort a small quantity of white powder is finally obtained, which will liquefy gelatin, digest fibrin and albumin, and convert starch into glucose.

To separate the diastase-like ferment from the liquefying ferment, the mixed ferments were rubbed up with glycerin and filtered. The solution in glycerin contained the hydrating ferment, while the undissolved portion taken up again in water and precipitated by alcohol does not act as a hydrating agent, but as a digestive agent.

The trypsin-like ferment can also be precipitated by means of saturated salt-solution. This latter ferment seems to be formed in much smaller amount than the former.

The action of both of these ferments is destroyed above 55° C. They contain nitrogen, but when pure do not give the general albuminoid reactions.

In order to try and obtain these ferments in a purer form, and possibly larger quantity, an artificial culture-medium proposed by Fermi, in the *Archiv. für Hygiene*, vol. xiv, for use with other germs, was tried for the hog-cholera bacillus. This contained 1 per cent. ammonium phosphate, 0.1 per cent. acid potassium phosphate, 0.02 per cent. magnesium sulphate, and from 4 to 5 per. cent. glycerin. The hog-cholera germ grows vigorously in this liquid, and after from three to four weeks the cultures become alkaline in reaction. They give also the peculiar amine odor characteristic of the hog-cholera cultures. From these artificial sterilized cultures I have so far been unable to separate the diastase-like ferment, but a small amount of the tryptic ferment, showing that the ferment-production is dependent upon the medium.

As for the physiologic effects of these ferments, Fermi holds that in general the soluble ferments are without great physiologic importance in the process of disease.

The initial experiments that I have made upon

[1] Read before the Chemical Section of the American Association for the Advancement of Science, Rochester, August 17, 1892.

guinea-pigs show that, so far as this particular disease at least is concerned, the ferments are of great importance in the production of immunity.

Guinea-pigs about a pound in weight each have been injected with a sterile solution in water of these ferments, the amount taken varying from 0.003 gram up to from 0.02 to 0.05 gram. The injections below 0.01 gram were without ill-effect, beyond that there was a rise of temperature for several days. The injection of 0.05 gram was in several instances sufficient to kill the animals. The autopsies showed some injection of the bloodvessels of the intestines, but in other respects the animal was normal in condition.

A single injection of 0.04 gram of the ferments was sufficient to make the animals immune to an inoculation with the hog-cholera germ that was sufficient to cause the checks to die in ten days.

It is probable, therefore, that the soluble ferments exert in their way, at least in some diseases, a potent action in rendering the animal insusceptible to disease.

It is possible, too, that to the indirect action of these specific ferments we may trace the protective and curative influence of the blood-serum of immune animals.

CLINICAL MEMORANDA.

PEANUTS IN THE VERMIFORM APPENDIX; OPERATION; COMPLETE REMOVAL OF THE APPENDIX; RECOVERY.

BY M. ROSENHEIMER, M.D.,
OF MILWAUKEE, WIS.

EMMA J., an American, twenty-three years old, was first seen on May 5, 1892, at 5 P.M. She had had a slight chill and pain in the abdomen since early in the morning. She had been feeling well the day before, when she came from her home in the country to friends in the city. She had always been constipated, but had had two slight bowel-movements in the forenoon. On inquiry, I learned that she had eaten some cherries the evening before, but she was positive that she had not swallowed any of the stones. It was only at a later questioning that the fact was elicited that she had eaten peanuts two days previously. She felt nauseated, and had vomited once or twice. I prescribed a mixture containing the fluid extract of opium, but without relief. The pain gradually became localized to the right iliac region, and increased in intensity. The temperature was 100.5°, the pulse 96. I made a diagnosis of appendicitis, and administered half a grain of morphine hypodermatically, and ordered warm local applications.

I saw the girl again on the following day at 8 A.M. She had rested several hours during the night, but the pain gradually returned, and was again controlled by the administration of quarter-grain doses of morphine. The lower limbs were flexed on the abdomen, and there was great tenderness over the cecum. There was considerable nausea and frequent retching. The temperature was 99.5°, the pulse 96. The warm applications were continued, as well as morphine administered at intervals. At 5 P.M. of this day there was much pain, in spite of the anodyne, and the abdomen was tympanitic, excepting in the region of the cecum, where there was flatness. The right groin was at this time also a little more elevated than the left groin. Nausea became extreme, and the slightest attempt to move or to raise the head was attended with retching. The temperature was 102°, the pulse 108. The bowels had not been moved since the morning of the preceding day; nor had the patient taken any nourishment. Thirst was marked, but only small quantities of lemonade were retained. The family had been advised of the girl's illness, and some members having arrived, a consultation was proposed.

At 9 P.M. I saw her again, in consultation with Dr. W. H. Earles, who concurred in my diagnosis. The patient was having great pain, with almost constant nausea and retching. The temperature was 101°, the pulse 108.

Operation was advised, but it was decided to wait until morning.

The girl rested some during the night, after full doses of anodyne, but the pain returned. It was now decided to operate, and the conditions being explained to the patient, an intelligent young woman, her consent was obtained. A full dose of morphine was administered, and she was transported to Trinity Hospital. The operation was performed at 11.30 A.M., Drs. Earles and Hoyer assisting. The patient took chloroform badly, and ether was substituted. She ceased breathing several times, and became deeply cyanosed, so that it became necessary to resort to artificial respiration. While under the anesthetic, a circumscribed induration in the right iliac region could be plainly mapped out. An incision was made parallel with, and about an inch and a half internal to, Poupart's ligament, extending from the level of the anterior superior iliac spine downward for three or four inches, and the seat of the trouble exposed. On opening the peritoneum, some brownish, slightly fecal-smelling fluid escaped. After some search, the appendix was found. It contained two large bodies, and was gangrenous for an inch of its length, having perforated at three points. After the appendix had been removed, it was found to contain two good-sized peanuts. The abdominal cavity was irrigated with sterilized water, the wound plugged with sterilized iodoform-gauze, and an antiseptic dressing applied. The patient's condition at the close of the operation, which occupied about forty minutes, was critical, but improved after the administration of several hypodermatic injections of brandy. She was placed in bed, and heat applied to the extremities. Morphine was given hypodermatically, in sufficient quantity to keep her comfortable.

The temperature for two days varied between 100° and 102°; the pulse ranged at about 132, and was feeble. The wound was dressed after twenty-four hours, quite a quantity of fecal-smelling fluid having saturated the dressings. On the fourth day the temperature and pulse became permanently normal. Absolutely nothing was given for the first twenty-four hours, although the thirst was distressing. After this, lemonade in dram-doses was administered, and, later, milk and lime-water. She improved rapidly, and made a complete recovery. At the date of writing, five weeks after the operation, the

girl had left the hospital, and returned to her home in the country, a distance of fifty miles.

My supposition is that the peanuts were shrivelled and small when swallowed, and found their way into the appendix, where, absorbing moisture, they swelled, and, giving rise to strangulation, caused the subsequent trouble.

802 THIRD ST.

GASTROSTOMY IN CARCINOMA OF THE CARDIAC ORIFICE.

BY EMORY LANPHEAR, M.D., PH.D.,
OF KANSAS CITY, MO.;
SURGEON TO UNIVERSITY DISPENSARY, ETC.

IN discussing the subject of "Carcinoma of the Cardiac Orifice of the Stomach," Lauenstein[1] does not approve of the establishment of a fistula whenever obstruction of the cardiac orifice, dependent upon carcinoma, is nearly or quite complete. The chief objection to operation for the formation of a fistula is that when the disease is so far advanced as to necessitate feeding by other means than by the mouth it becomes impossible to approximate the wall of the stomach to the abdominal parietes—the first step in a gastrostomy; and Lauenstein reports two cases in which the attempt was unsuccessful. I have a similar case to report—one in which, upon opening the abdomen, the carcinomatous stomach was so much shortened and so closely adherent to its original position, because of the attachment of the cardiac tumor, that it was impossible to bring any portion of the anterior wall of the stomach in apposition with the thoracic or abdominal wall.

Mr. B., a patient of Dr. C. F. Wainwright, about fifty years old, for fifteen months had presented a clear clinical history of carcinoma of the esophageal extremity of the stomach. For three months there had been great difficulty in getting even liquid food into the stomach, and for three weeks the patient could not swallow any food at all. He was nourished by enemata, but he rapidly emaciated; the abdomen was scaphoid; a small tumor could be detected in the region of the cardiac orifice of the stomach; the esophageal tube was arrested at a distance of thirty-eight centimeters from the superior dental arch.

With Dr. Wainwright assisting and Dr. J. H. Thompson giving ether, laparotomy was performed June 20, 1892. A large nodular mass was found surrounding the cardiac extremity, while the upper third of the stomach was likewise involved in the growth. The stomach was shortened to less than half the normal size and bound by adhesions to the surrounding structures. Every attempt to draw the anterior wall of the stomach into apposition with the abdominal incision caused sudden and complete cessation of respiration. After several attempts, each followed by artificial respiration, the abdomen was closed by catgut sutures and dressed with bichloride gauze held in place by plaster. The operation occupied twenty-eight minutes. The patient was put to bed, without much shock. On June 21st, there were no visible effects of the operation, the condition being the same as before. Rectal feeding was continued. On June 29th, the patient had completely recovered from the operation; the wound had healed by primary union. Absolutely no pain was felt at any time after the operation. The patient continued to sink, however, and died July 6th. The autopsy disclosed carcinoma of the lower extremity of the esophagus and of the cardiac extremity of the stomach. The adhesions were strong and extensive. The stomach was much reduced in size, but apparently in such a condition that some food might have been digested if gastrostomy had been successful.

The want of success in such cases as this, it seems to me, should not discourage operators from trying to establish fistulæ for carcinoma affecting the cardiac orifice, for experience has demonstrated that often some benefit may be derived; but care must be exercised in the proper performance of the operation, for, as Lauenstein observes, the fistula must be so made as to admit of the ready introduction of food and at the same time retain the gastric juice, as otherwise the patient will be worried by attempts at feeding and the edges of the wound will become excoriated by the outpouring of the stomach's contents.

Even when it is possible to complete the gastrostomy the operation may be a total failure, as some stomachs will be found to have disturbed chemical conditions—as the absence of hydrochloric acid; this, however, is quite rare, and cannot be regarded as a legitimate objection to an operation that holds a certain degree of hope of greatly prolonging life and is attended with but trifling danger—practically none at all in skilled hands.

Carcinoma of the stomach is not a rare disease; if diagnosticated early it is susceptible of removal, if it affect the pylorus or lesser curvature; if it involve only the cardia, early gastrostomy, before contractions and adhesions have taken place, will greatly prolong life. The relative situation, according to Welch,[1] in a total of 1300 cases analyzed, was: Pyloric region, 791; lesser curvature, 148; cardia, 104; posterior wall, 68; whole of stomach, 61; multiple tumors, 45; greater curvature, 34; anterior wall, 30; fundus, 19. Thus, a large proportion of cases, if recognized early, are within reach of the surgeon's knife for extirpation; if diagnosticated later, for gastro-jejunostomy when the pylorus is obstructed, for gastrostomy when the occlusion occurs at the cardiac orifice. I cannot too strongly urge the necessity for early diagnosis and the calling of a surgeon before the case has progressed so far as to render surgical interference useless.

[1] Centralblatt für Chirurgie, vol. xviii, No. 27, p. 513.

A CASE OF TRAUMATIC PERITONITIS COMPLICATED BY PNEUMONIA AND VARICELLA.

BY JOHN C. GORSUCH, M.A., M.D.,
OF YOUNGSTOWN, OHIO.

ON the evening of May 20, 1892, I was called to see a boy, five years old, and apparently of a robust and vigorous constitution. He had been riding on a large four-wheeled road-scraper which the men were employing working the roads. Accidentally, the little fellow lost his balance and fell under the wheels, the hinder and larger one of which passed over his abdomen, permitting the weight of the entire rear portion of the ponderous machine, and in addition, that of one or two of the operators, to bear down upon him.

On thorough examination I could discover no fracture

[1] System of Medicine, vol. ii. Philadelphia, 1886.

or comminution of bone, of either the ribs or vertebræ. Palpation over the abdomen gave evidences of marked internal injury, with considerable pain and tenderness, but tympany was absent. The temperature was 102° F., the pulse 120.

The parents were instructed in the application of the turpentine stupe, and directed to allow it to remain upon the abdomen until there was considerable burning and redness of the skin. This was to be followed by large hot flaxseed poultices, changed every half-hour. Following the opium plan of treatment, gtt. v of the tincture were ordered every two hours, except during sleep.

The prognosis of such injuries being exceedingly grave, the parents were given timely warning of the usual outcome of similar cases.

On arriving the next morning, I found the temperature 103° F. and rising; the abdomen was becoming tympanitic, but pain and tenderness were controlled by the opium. The little patient showed great fortitude, stating that he did not feel much pain and had slept quite well throughout the greater part of the night. A diet of milk and soft-boiled eggs was ordered and the previous treatment was continued.

Two days afterward Dr. J. E. Woodbridge, of Youngstown, saw the patient in consultation with me, and little change was noticed in the symptoms. The persistence in the use of opium had produced a marked contraction of the pupils, and upon the suggestion of Dr. Woodbridge, five drops were ordered every three instead of every two hours, as previously.

The patient was not seen again for three days, when there was considerable increase in the tympanites; pain was severe, the patient assuming the peculiar attitude characteristic of peritonitis, which now evidently involved the entire lower portion of the abdomen. The lessened amount of opium only partially controlled the symptoms.

At this juncture, owing to the lack of proper precaution on the part of the parents, the patient contracted a bronchitis of the smaller tubes, which soon reached the lungs, and the symptoms of catarrhal pneumonia appeared. Temperature and pulse, both of which up to this time were indicative of improvement, now, owing to the supervention of the inflammatory process in the lungs, displaying decided exacerbations.

While the treatment of the peritonitis was continued unchanged, the following was prescribed for the pneumonia:

℞.—Syr. ipecac. . . . . f℥ss.
Tinct. aconit. rad. . . . . gtt. xxxij.
Syr. tolutani . . . . . f℥ij.
Aquæ . . . q. s. ad f℥iv. M.

Sig.—A teaspoonful every two hours at first, then every three hours.

In addition, counter-irritation of the chest with sinapisms was practised and the body was wrapped up in hot flannels. Inhalations of steam, oil of eucalyptus (½ oz.) and water (a quart), were used for ten minutes three or four times a day. This procedure was successful in relieving the dyspnea. The coughing, which was quite frequent, aggravated the abdominal trouble, as the patient was unable to lie still or restrain the movements of the abdomen during the paroxysms. The pneumonia was not of a severe type, but was sufficient to aggravate the primary abdominal inflammation.

Quite contrary to my expectation, the history of the patient hereafter was one of steady and rapid recovery. The tympany and pain subsided, and the temperature gradually fell until it reached normal.

The final complication, varicella, coming on at this time, was more of a clinical curiosity than any serious drawback to recovery, and the question arose in my mind whether this surface-irritation affecting the skin did not, by vicarious action, alleviate the internal abdominal and pulmonary inflammations.

Owing to the constant use of opium, the patient was excessively constipated, hard fecal accumulations being easily felt through the abdominal walls. Cathartics were given and produced a large evacuation of firm scybalous masses. After this, rapid convalescence followed, and in a little over two weeks from the date of the injury the patient had entirely recovered—a termination that, if not remarkable, was at least wholly unexpected.

GASTRO-ENTEROSTOMY FOR CARCINOMA OF THE PYLORUS.

BY C. E. RUTH, M.D.,
OF MUSCATINE, IOWA.

ON July 8, 1891, I saw J. S., fifty-eight years of age, a gardener and farmer, whom I found emaciated and weak. He had always been well, except that for a number of years he had been compelled to exercise considerable care in his diet; certain articles of diet would cause considerable discomfort. Two months previously to my seeing him, while engaged in severe labor in the field, he was suddenly seized with pain in the epigastrium, accompanied with nausea and vomiting of a large amount of dark fluid, mixed with mucus Subsequently, he was able to take but very little nourishment, and for three weeks he had been able to retain only a small amount of water. The bowels were obstinately constipated. The vomited matters were always dark, and sometimes amounted to two quarts at a time. Making the stomach as full and as empty as I could without irrigation with the stomach-tube, because of the patient's refusal, I found the viscus greatly dilated and displaced downward, in part occupying the left iliac fossa. The pylorus was displaced downward about three inches, and through the attenuated abdominal walls I could detect apparent thickening and hardening of the pyloric extremity of the stomach.

My diagnosis was pyloric stenosis, due to carcinomatous deposits. The man was only able to sit up; and his pulse was 120 per minute and weak. I explained the serious nature of his trouble and the possibility of benefit from an operation, though the case was to all appearances almost hopeless. He readily consented to have an operation performed.

I directed a course of rectal alimentation, and returned two days later to perform the operation. I found that the injections had not been given. His pulse was weak and 150 per minute. I performed a gastro-enterostomy, using the Senn bone-plates. No especial difficulty was encountered, save that of keeping the patient alive. The diagnosis was fully verified; the pylorus was found the

seat of a small carcinoma, just sufficiently large to close the orifice. The growth had not infiltrated any of the surrounding tissues or organs. It would have been a most beautiful case for resection, if resection of the pylorus is ever indicated, which I very much doubt. Had gastro-enterostomy been performed while the patient still possessed sufficient strength, he might probably have lived eighteen months or two years. He survived the operation about twelve hours, suffering no pain, and not vomiting. The stomach was thoroughly irrigated before beginning the operation, and the incision was made in the linea alba. The anastomosis was made between the stomach and highest possible point of the jejunum.

CASE OF DISLOCATION AT THE ELBOW-JOINT, WITH RUPTURE OF THE MUSCLES AND LIGAMENTS; SPEEDY RECOVERY.

BY FRANCIS D. MERCHANT, M.D.,
OF BATOPILAS, MEXICO.

THE case herewith reported is rather unique, both as to the lesion itself and as to the speedy recovery, taking into consideration the gravity of the injury.

On the morning of May 10, 1892, I was called to see Esmerigildo Gonzalez, thirteen years old. About two hours previously he had, while on his way to school, climbed a guamúchil tree for fruit. Losing his hold, he had fallen about twenty feet, striking upon his left arm. Upon visiting him at the hovel that served as home, I found his arm wrapped in a dirty rag, the removal of which disclosed an upward and backward dislocation of both radius and ulna, a wound in the cutaneous structures in front of the joint, through which protruded for a distance of about two and a half inches the lower extremity of the humerus, including both of the condyles. The wound had apparently been caused by the transmission of the force of the blow through the osseous structures. The anterior, internal lateral and external lateral ligaments were ruptured, as also were the biceps and brachialis anticus muscles close to their attachments. It was not possible to detect any fracture. There was also a simple dislocation at the radio-ulnar carpal articulation.

Administering chloroform, "saddle-bag" antisepsis was resorted to, and the reduction at the elbow was effected in the following manner: The thumb of the left hand of the operator was placed against the lower extremity of the humerus, the fingers of the same hand being used to steady that bone, while the forearm was extended with the other hand and the humerus pushed upward and backward, both movements being effected at the same time. In this way the reduction was very speedily effected. The wound was dressed antiseptically. The reduction of the dislocation at the wrist was next effected and the arm was placed in the semi-flexed position, no splints being used on account of the extreme heat.

There was a little swelling of the ruptured muscles, but no inflammation of the joint and no appreciable rise of temperature. The wound was dressed daily for five days as a precautionary measure; then every third day with a solution of mercuric chloride and mercuric chloride gauze. There was no suppuration whatever. In twenty days the wound was healed, and soon after, all of the movements of the joint, with the exception of extreme flexion, were restored.

MEDICAL PROGRESS.

Protective Inoculations against Cholera.—HANKIN (*Brit. Medical Journal*, No. 1654, p. 569) gives an account of his experiences in submitting to inoculation for the purpose of securing protection against cholera, with a description of the method employed by Haffkine in the production of the vaccine. A virulent culture of cholera-bacilli is obtained by passing the organisms successively through a series of guinea-pigs. This virus is fatal to guinea-pigs when administered in the ordinary way and also when injected deeply into the muscles. Introduced beneath the skin, however, it does not kill, but gives rise to localized edema and necrosis, the resulting wound finally healing by granulation. An animal thus treated is immune to inoculation with cholera in any way. To obviate the necrosis that occurs, it is necessary to protect the animal by previous treatment with a virus that has been attenuated by cultivation in a slow current of air. Such a virus is, however, still capable of killing guinea-pigs if injected into the peritoneum in quantities a little larger than are necessary to attain the same result with the ordinary virus. If a dose of this attenuated virus (say one-eighth of a 24-hour-old agar-culture) is introduced beneath the skin of a guinea-pig, extensive edema develops, followed by a hard nodule that persists for a considerable time. If a week later the animal is inoculated with a similar quantity of the strengthened virus, edema develops, less decided than at first, while necrosis fails to appear. Tested a few days later, the animal will be found to be immune to cholera, however the inoculation may be made. The immunity thus conferred has been found to be undiminished a couple of months after treatment. Rabbits and pigeons have been rendered immune by the same process. A like result has been obtained in seven persons that have submitted to the treatment. In the human being, the injections give rise to local pain and swelling, malaise, elevation of temperature, and a tendency to constipation. It has been found possible to vaccinate guinea-pigs by means of cultures previously sterilized by heat. Under these circumstances the local reaction appears to be less decided than when the inoculation is made with living cultures; but the immunity produced does not seem to be of such a permanent character as that produced by the living microbe. Cultures in agar seem preferable to cultures in bouillon for inoculation, as the former contain less of the soluble poisons.

Total Extirpation of a Carcinomatous Uterus in the Sixth Month of Pregnancy.—STOCKER (*Centralbl. f. Gynäkol.*, 1892, No. 32, p. 632) has reported the case of a woman, thirty-six years old, who had eight children, the last some three and a half years previously. The labors had all been uneventful. The woman again became pregnant, but soon hemorrhage and offensive discharge set in. Textural changes in the cervix uteri became evident. Finally, the existence of carcinoma became indubitable, and it was decided to remove the entire uterus. The operation was performed in about the sixth month

of pregnancy. The body of the uterus was removed through an opening in the abdomen; the cervix through the vagina. The fetus died during the operation. Little blood was lost, and the further course of the case was uneventful. The patient was dismissed from the hospital on the twenty-eighth day.

Subcutaneous Suture of Fractured Patella.—Aitken (*British Medical Journal*, No. 1647, p. 177) has devised a hollow drill for the subcutaneous suture of fractured patellæ. The patient is anæsthetized and the knee is flexed by an assistant until the patella becomes prominent. The instrument, armed with a stout silver wire, is introduced from below, and the patella is slowly and carefully pierced, the point of the instrument being brought out above. The drill is now removed, while the wire remains. The instrument is again introduced, and passed from the lower to the upper opening beneath the skin and superficially to the patella. The instrument is now armed with the projecting upper extremity of the suture and is withdrawn. The two extremities of the suture, projecting from the lower opening, are drawn tightly and tied and the knot is allowed to sink beneath the skin.

Lead-poisoning from a Retained Bullet.—Küster (*Archiv f. klin. Chirurgie*, Bd. xliii, H. 3 u. 4) has reported the case of a man, who, seventeen and a half years after having been wounded at the knee by a bullet that entered the head of the tibia, but failed to make its exit, presented symptoms of chronic lead-poisoning: anemia, colic, anorexia, a blue line at the margin of the gums, and slight tremor of the hands; the urine contained lead but no albumin. The primary wound was opened, and numerous plates and small fragments of lead were found in the periosteum and bone. The bone was found softened in a situation opposite the point at which the ball had entered. The symptoms persisted for a short time after the operation, but soon disappeared.—*Münchener med. Wochenschr.*, No. 35, p. 628.

The Influence of Couveuse and Gavage upon the Mortality of the Newborn.—Since the introduction of couveuse and gavage at the Paris Maternité, the mortality among infants born prematurely has been considerably reduced, as the following figures amply demonstrate:

Duration of Gestation.	Mortality. Formerly.	Now.
6 months . .	100 per cent.	84 per cent.
6½ " . .	78.5 "	63.4 "
7 " . .	61 "	50.2 "
7½ " . .	46 "	23 "
8 " . .	22 "	11.2 "
8½ " . .	12 "	4 "

—*La Méd. Mod.*, 1891, No. 3.

Arthropathy in Syringomyelia.—Nissen (*Beiläge zum Centralbl. f. Chirurgie*, No. 32, p. 47) has reported two cases of syringomyelia in which, in addition to the usual derangement of sensibility and other trophic changes, the left shoulder-joint was distended with fluid, while the head of the humerus, the acetabulum, and the other structures entering into the formation of the articulation had undergone changes partly destructive, partly hyperplastic. The volitional mobility of the joints was impaired, but passive mobility was preserved. Although in the one case the deformity had been preceded by traumatism, it is thought that in both cases the arthropathy bore a direct relation to the affection of the nervous system.

A Case of Pulmonary Obstruction, with Bradycardia.—Sendler (*Centralb. f. klin. Med.*, No. 31, p. 642) has reported the case of a woman, thirty-five years old, who for a year and a half complained of weakness and attacks of syncope. There was general pallor of the skin and mucous membranes. The area of cardiac percussion-dulness was much increased. The impulse was scarcely palpable. The heart beat forty times in the minute. The radial pulse was feeble, but isochronous. Over the whole precordia a sawing murmur could be heard with the systole, but most distinctly in the aortic and pulmonary areas. It was learned that the patient had for some time presented symptoms of disease of the heart, and that she had taken digitalis, though in what doses and for what length of time could not be ascertained. The woman died after she had been under observation for twenty days. At the autopsy the brain and membranes were found hyperemic, and the ventricles containing an excess of fluid. The heart was greatly enlarged and surrounded by fat. All the cavities were dilated; the walls of the left cavities were of normal thickness, but those of the right cavities were double the normal thickness. The valves were all normal, but on the wall of the right auricle, about a third of an inch below (and obstructing the current of blood through) the orifice of the pulmonary artery, was a growth as large as a walnut that upon examination proved to be a fibroma.

The Association of Myo-fibroma and Carcinoma of the Uterus.—Ehrendorfer (*Archiv für Gynäkologie*, Bd. xlii, H. 2, p. 255) maintains that the simultaneous presence of fibromata and malignant neoplasms of the uterus is more common than has hitherto been believed. In the removal of fibromata (hystero-myomectomy), before treatment of the pedicle, immediately after the removal of the tumor, the existence of malignant disease is to be looked for. If fibro-myomata of the uterus are associated with malignant disease, or, if reasonable suspicion of malignant disease exist, complete removal of the entire uterus is indicated. None of the modes of treating the pedicle after hystero-myomectomy, in particular the extra-peritoneal, will insure immunity to the recurrence in case of malignant disease of the uterine mucous membrane, even after thorough excision and cauterization of the stump. If, in cases of fibro-myomata of the uterus, there occurs profuse watery, mucous, or discolored discharge, or profuse hemorrhage, with severe pains, particularly at the climacteric period, a suspicion of the existence of malignant disease of the mucous membrane is warranted, and symptomatic treatment is to be replaced by operative treatment. It is important and interesting to determine if the recurrence of malignant disease of the body of the uterus is more common alone or in association with fibro-myomata.

Pseudo-photesthesia.—Gradenigo (*Annales des Mal. de l'Oreille*, etc., vol. xviii, No. 8, p. 606) has reported the case of a healthy man, twenty-one years old, of excitable temperament, and without ocular derangement, who for two years had suffered with attacks of intense

headache. For a short time the patient had been conscious of a sense of occlusion and of fulness of the nares. The inferior turbinate of both sides was considerably hypertrophied. The sensibility of the parts was greatly exaggerated, so that the introduction of an instrument induced pain. Surgical treatment of the hypertrophic condition was followed by disappearance of the headache. When the nasal speculum was removed at the conclusion of each manipulation the patient perceived a flash of bright-red color. To this phenomenon of false sensation the name of pseudo-photesthesia has been given. It may appear in connection with any of the special senses.

Ligation of the First Portion of the Subclavian Artery and Excision of a Subclavio-axillary Aneurism.—HALSTED (*Johns Hopkins Hospital Bulletin*, vol. iii, No. 24, p. 93) has reported the case of a colored man, fifty-two years old, who for eight months had noticed a pulsating swelling below the left clavicle, progressively increasing in size. The tumor was smooth and almost spherical, and measured sixteen inches in circumference at its base. Slight pulsation was visible and palpable. The mass appeared to be solid but elastic. No pulse could be felt at the left wrist or at any point below the aneurism. It was determined to ligate the vessel and excise the sac. An incision was made from the sternal notch to the acromio-clavicular articulation, thence down the arm to the lower border of the major pectoral muscle over the greatest convexity of the tumor. From the inner extremity of his incision a vertical incision upward, some two inches long, was made. A third incision, about four inches long, was made vertically downward from the middle of the horizontal incision. Finally, a vertical incision, an inch and a half long, was made upward at the acromio-clavicular articulation. The flaps of skin were laid back. The wall of the aneurism was found inflamed, soft, and thin. Two strong silk ligatures were applied to the artery as it emerged from the chest, and the vessel was divided between them. The aneurism was then removed in one piece. The axillary artery was ligated at the beginning of its second part. The operation consumed three and one-half hours. The wound healed perfectly. Sixty days after the operation the patient had excellent use of the related arm.

The Electric Resistance of Urine.—TURNER (*Lancet*, No. 3594, p. 140) has found that in health the urine opposes an average resistance of 45 ohms to the passage of an electric current. The resistance varies, as a rule, inversely with the specific gravity. The proportion of urea has but little influence upon the degree of resistance, which depends almost wholly upon the salts. Pneumonia and diabetes constitute exceptions to the rule. The increased resistance in pneumonia depends upon the diminution of the chlorides; in diabetes, upon the relative diminution of all the salts, while the presence of sugar, by its viscosity, may tend to increase the resistance. In acute and chronic nephritis, in certain respiratory affections, in pernicious anemia and other forms of anemia, the resistance is high; in neurotic individuals of active mental capacity, and in some other conditions, the resistance is low. Other things being equal, the lower the electric resistance the healthier the condition of the kidneys.

THERAPEUTIC NOTES.

A Case of Acute Codeine Intoxication.—MEDVEI (*Internationale klin. Rundschau*, 1892, No. 36, p. 1457) has reported the case of a woman, forty-two years old, of profoundly neurotic tendencies who took 7½ grains of codeine with suicidal intent. For a half-hour the patient presented no unusual manifestations, unless, perhaps, for uncommon cheerfulness and mirth. At the end of this time, however, she complained of a sense of heat, of suffocation, of restlessness, and of vertigo. Soon, mental excitement, itching, and redness of the skin were superadded. The conjunctivæ were injected; the pupils were full and reacted sluggishly to light. Saliva dribbled from the open mouth and the tongue was shaken with tremor. The muscles of the face and extremities twitched convulsively. The knee-jerks were exaggerated, although there was no response to pressure or pricking. The pulse was 46 in the minute, full and hard. The contents of the stomach were evacuated by means of lukewarm water, copper sulphate, and a stomach-pump. The pulse subsequently rose to 116 and became feeble and soft. Mechanical irritability was now greatly increased. The deep reflexes were greatly exaggerated. The pupils were dilated to the utmost. The pulse grew weaker and cyanosis developed, so that artificial respiration and stimulation became necessary. After vigorous treatment, continued for several hours, the condition of the patient improved and the danger of a fatal issue was averted. On the following day the patient slept a good deal, but was easily aroused. A day later she complained of headache, of mental confusion, and of intense itching.

Asaprol is an α-monosulphone derivative of β-naphthol that appears as a calcium salt. It is a white powder, soluble in water (1 : 50), and in alcohol (1 : 3); it is unchanged by heat, is but feebly toxic, is well borne by the stomach, and is rapidly excreted by the kidneys. Asaprol is decidedly antimycotic. In doses of from 15 to 60 grains it acts as an antipyretic and anodyne. It has proved exceedingly useful in acute rheumatism. On the first day 30 grains are given; on the second, 45 grains; and on the following days 60 grains, until pain and pyrexia subside, when the dose is gradually diminished.—*Wiener medicinische Presse*, 1892, No. 35, p. 1394.

For Asthma.—

℞.—Potassii iodidi . . . . ℥iij.
Ext. belladonnæ fluid. . . . . fʒj.
Ext. lobeliæ fluid. . . . . fʒij.
Ext. grindeliæ fluid. . . . fʒss.
Glycerini . . . . . fʒiij.—M.
S. A teaspoonful as required.

BARTHOLOW.

For Hemorrhoids.—

℞.—Iodoformi . . . . . gr. v.
Ext. belladonnæ . . . . . gr. x.
Chrysarobin . . . . . gr. j½.
Vaselin . . . . . ℥ss.—M.
Ft. ung. S.—Apply topically.

ROSOBUDSKY, *Rif. Med.*; *Münch. med. Woch.*

THE MEDICAL NEWS.

A WEEKLY JOURNAL

OF MEDICAL SCIENCE.

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SATURDAY, OCTOBER 1, 1892.

HOSPITAL FACILITIES FOR MEDICAL EDUCATION.

THE report made to the Senate of the University of Toronto by the HON. EDWARD BLAKE, Chancellor, and a special committee, is an admirable study, and will repay careful attention by those interested in the subject of medical education. It is not very complimentary to medical colleges in the United States, excepting Harvard Medical School, and as a saving parenthesis, "probably Pennsylvania,"—from which we gather that Pennsylvania was not studied. Had the committee, on leaving Boston, come to Philadelphia, it would have found that not only does the University of Pennsylvania, the Jefferson, Woman's, and Medico-Chirurgical Colleges, and the Polyclinic, each have, and utilize for teaching, its own hospital, with large out-door as well as indoor services, but that the unrivalled wards of the Philadelphia Hospital are zealously utilized by competent and ambitious teachers.

On the subject of the propriety of utilizing hospital wards for teaching purposes, which it seems was debated in Canada, as it has been in this city, the Toronto Committee, among other things, says:

"The interests of the hospital, the welfare of the public patients, the advancement of knowledge, and the improvement of medical education will all be served by an increase in the facilities for clinical instruction. The most famous and most frequented hospitals in the world are just those where the most clinical teaching has been done and the best use has been made of the opportunities presented. Patients recognize the value of attendance of clinical instructors whose double duties, as visiting physician or surgeon and clinical teacher, impose on them double responsibility for frequent and regular attendance, for great care, for thoroughness of examination in each case, and for repeated observation of its progress. Experience shows that patients rather enjoy than object to the examination."

As to the best manner of utilizing hospital wards and dispensaries the committee properly says:

"Adequate clinical teaching demands frequent contact of the students with the patient under the eye and ear of a trained instructor. We should aim at the creation of small and manageable classes at the same bedside day after day, under competent supervision. Numerous clinical instructors are required, since, all things being equal, the smaller the class the better the opportunity."

The methods of the Harvard School are, with its teachings in the Massachusetts General Hospital and the Boston City Hospital by numerous professors, assistant professors and associate professors, instructors and assistants, highly commended. One-half of each year's class of students goes round the wards daily for two years. *Each student* must get bedside instruction three times a week throughout the eight-months' session. The staff, consisting of five professors and three assistants in medicine, four professors and ten assistants in surgery, serves throughout the entire year.

But it is especially in Great Britain that the model has been found. In the great London hospitals the chief usually rises to his high grade by passing successfully through the lower courses of service: for example, that of clinical tutor and assistant. In these grades he must prove himself worthy against numerous competitors by hard work and by a long record as an observer and investigator, and generally it is some time after the prime of life, when his name has already become widely known, that he reaches this post. Thus patients obtain the best and ripest skill and experience in the world, while students must profit by the teaching of men who have spent perhaps twenty or thirty years in the various grades of clinical work, and have proved their right to their posts as excellent teachers and reliable investigators and observers.

The general rule is to place on the visiting staff

not only chiefs but also assistants, and to keep on duty both chiefs and assistants for the whole year, with the exception of the months of July and August, when the chiefs are relieved. The assistants are allowed great liberties and privileges, so that the position is one of attraction to men of parts, and the title one of honor.

In Paris, beside the professors, prosectors, internes and externes, there is an officer corresponding to the English assistant physician, or surgeon, designated *chef de clinique*, assigned to each professor. This *chef de clinique* does much clinical teaching in the wards and elsewhere on the cases of the professor.

In the Vienna hospitals attendance and instruction are carried on by the professor and assistants of various grades, paid by the authorities. In Strassburg the assistant gives the clinics on his professor's patients in the wards.

The committee, therefore, came to the conclusions that the best scheme of organization for a teaching hospital embraces a staff of assistant physicians and surgeons in addition to the staff of chief physicians and surgeons; that the number of assistants should be equal to that of the chiefs, and that the term of duty of the staff should be continuous, with the exception of the summer months, during which the assistants should be in charge; that theater lectures, while useful within their own important sphere, cannot prove an efficient substitute for bedside teaching; that pathology is so closely allied to clinical work that the two cannot properly be separated. There should be an efficient pathologic staff that should assist in bedside teaching and investigation when called upon by the attendants; and systematic records not only of the symptoms, but of the results of analysis and examination of the blood, fluids, and excreta should be required to be kept. To facilitate the attendance of students, necropsies should take place at stated hours, and while the work should be performed by the pathologist, it should be in the presence and under the direction of the attending clinician. A copy of the pathologist's record should be filed with the clinical records of the case. Clinical clerks and registrar should be selected with great care, and the staff should be responsible for some supervision of the work. If records are thus carefully and conscientiously made by the collaboration of the various officers referred to, from the highest to the lowest, statements of the main observations of importance and reports of cases of interest to the profession can advantageously be edited and published yearly or half-yearly by a committee of the staff.

Taking our own Philadelphia Hospital as an institution on a par with the Toronto General Hospital, in its relations to the public, although somewhat larger in its number of beds, it will be seen that most of the recommendations made by the committee of the University of Toronto could be well applied to the local institution. Many of them, indeed, are already in force. The visiting staff includes professors, assistant professors, and clinical lecturers of the various college faculties, who have the privilege of utilizing the wards for bedside instruction. In the matters of pathologic teaching, of records, of carefully selected, paid clinical clerks and of assistants adequately paid by the colleges to take a sufficient number of small ward-classes through the institution, we have not yet quite realized the recommendations of the Toronto committee. The Philadelphia Hospital Reports have begun to be issued, and will doubtless be continued from year to year. They should, however, be placed upon sale, by which means part, if not all, of the expense of production would be recovered.

EARLY STIMULATION OF SEXUAL CURIOSITY.

ONE who is acquainted with the modern American schoolboy need not be told that he is thoroughly well versed in the wisdom or unwisdom of sexual affairs, and that too often his knowledge is the result of experience. The "smart young man," either of city or country, has long since satisfied a morbid curiosity too soon aroused by his older playfellows, and whether by obscene books or the semi-scientific and semi-medical caterers to such markets, or worse yet, by the scandal-mongering newspapers, he has been prepared to understand and practise the art of sexual allusion and risky flirtation.

Many mothers cannot know how near their daughters rival their sons in this illicit knowledge, because too frequently the daughters are more *instruite* than the mothers. When the mothers were young ladies, fashionable conversation between young people was not a game at *sous-entendre*, a match as to which could suggest the most worldly wisdom and say the most improper things in the most proper manner. Hidden meanings that would have made their mothers blush run like subtle tremors beneath the mask of society talk and repartee.

Operatic and theatrical frivolity make sexual knowledge, of a lurid theoretical kind, a sort of necessity to the "bright young woman." She may not yet have actually partaken of the apple of the tree of knowledge, but she knows well enough "all about the old story," has learned the secrets in advance, probably has quiveringly "nibbled" at the apple and enjoyed its perfumed beauty.

One of the indirect causes that perhaps has most strongly contributed to this pernicious tendency has been the custom of allowing boys and girls to be alone in each other's company. Go where one may in our country, it is astonishing how it is taken as a matter of course that these youngsters may be safely trusted with each other, either in couples or in "parties" of all kinds. In the country "kissing parties" are by no means out of date, and boys reaching out toward puberty with discounted knowledge, are allowed to take the girls to meetings, buggy-rides, and all that. In the city the fact is the same, with the change of customs and circumstances. It is increasingly common to meet in every square numbers of these couples of boys and girls, and to overhear the scraps of conversation and the laughter that shows half-concealed pleasure at cunning insinuation. The innocent purity of the child's eye and expression early fades into the cunningly secretive answering glance that tells the observant mind of an indescribable unconscious grace replaced by a describable conscious disgrace.

All such customs serve to stimulate sexual desire and shorten childhood to a degree that subjectively is incompatible with proper development of body and mind, and objectively with the legitimate satisfaction of marriage. The more settled and advanced the civilization, the later the life-date of marriage. The fixation of thought, emotion, and not seldom action, upon a function thus early is not only useless, but is also cruel and dangerous. Our social customs tend to hurry children into sexual precocity and immaturity, the physician alone knowing a tithe of the resultant evils. Every social circle has its unspoken story of the strange disappearance of some bright girl, who at first went "visiting," and about whom questions are already out of place.

"Early ripe, early rotten," is a homely old saw, but like many such, egg-full of wisdom. It is a truism of science that on the lengthened period of growth or childhood depends the permanence and vigor of the adult life. By his advice and teaching the physician cannot, if he would, help being an instructor of morality—or immorality; and as no one so well as he is aware of the fatal consequences of this vicious precocity, he should improve every offering opportunity to make people understand its indirect causes and its direct results.

SEPTIC DANGERS OF ADHESIVE PLASTERS, ETC.

In a recent number of *The Lancet*, Dr. Myrtle traces a case of angeioleucitis and death to infection by microörganisms derived from the adhesive surface of a bunion-plaster. The suggestion is at once aroused as to how many of the frequent cases of septicemia from trifling injuries may not be traceable to a similar cause. Everybody carries about with him, or has in the house for ready application, one of the many varieties of commercial "court" or adhesive plaster. The contamination in the pocket or in the drawer or cupboard of the *omnium gatherum* that serves as the family medicine-chest may be a a ready source of septic infection, when the plaster is transferred directly to an abraded or bleeding surface. Moreover, no one knows where or of what materials these plasters are made, or through what hands they have passed.

There is in the commercial articles used no pretence, and certainly no fact of asepticity. All sorts of animal refuse are doubtless made use of in their manufacture, old animal skins, horns, hoofs, parings, etc., and how filthy the process of concoction and preparation may have been, no one is of course capable of saying. Physicians should caution their druggists and patients against the use of the commercial varieties of adhesive plaster, unless there is a proper guarantee and certainty of the article having been properly prepared, kept free of septic contamination, the raw surface of the wound properly cleansed, and so forth.

Perhaps quite as important a caution would be that as to the common filthy habit of wetting the "court-plaster" with saliva before its application. Cases, we believe, are on record of syphilitic infection by this means, and it can be readily seen that any species of autoïnfection or heteroïnfection may thus be easily brought about. Only sterilized, freshly-boiled, or sublimated water should be used.

The German Anthropological Congress will hold its twenty-fourth annual meeting at Hanover in 1893, under the presidency of Virchow.

REVIEWS.

THE STUDENT'S HANDBOOK OF SURGICAL OPERATIONS. By FREDERICK TREVES, F.R.C.S., Surgeon and Lecturer on Anatomy at the London Hospital. 12mo., pp. 508. Philadelphia: Lea Brothers & Co., 1892.

THOSE general practitioners and operating surgeons who are familiar with Treves's *Manual of Operative Surgery*, and who require a book for office or class use, will hail with pleasure the present work, which is intended for the use of students who are preparing for the final examinations, or who need a handbook to assist them in carrying out operations upon the dead body.

It concerns itself only with the most essential and most commonly performed operations, omitting the general principles of operative surgery, the consideration of the critical value of various methods, regional anatomy, after-treatment, mortality, and results. The operations belonging to plastic surgery are likewise not considered, except as they concern the common deformities of the lip and palate. The volume contains the very latest teachings, so far as they concern the technique of operative work.

The practical and highly commendable classification employed in the larger work is followed, the operations being classified, first, in relation to particular structures, ligation of arteries, operations upon nerves; second, as to character, as amputations, tenotomy, and plastic operations; and lastly, as to the part or region of the body involved, as operations on hernia, on the bones and joints, upon the neck, head, spine, etc.

While the abridged work lacks some of the features that make the larger manual characteristic of Mr. Treves, for example, the sound general principles of operative surgery, the clear anatomical descriptions, the application of the antiseptic principle rather than any particular method, it is marked by what is most important to the student—the author's originality in the performance of the individual operations. The operations are characterized throughout by surgical judgment, anatomical accuracy, and practical familiarity with the subjects under consideration.

The illustrations are good, the size convenient, and the work will doubtless become very popular on both sides of the Atlantic.

ESSENTIALS OF DIAGNOSIS. By SOLOMON SOLIS-COHEN, M.D., and AUGUSTUS A. ESHNER, M.D. Illustrated. 8vo, pp. 382. Philadelphia: W. B. Saunders, 1892.

THIS member of the "Essentials" series is fully up to the standard of the others that have already appeared. In a work of this character there is, of course, nothing original, the authors merely voicing the views of recognized teachers and dealing only with the questions that are already *facts* in medicine. In reviewing such a book, therefore, all that can be spoken of is the completeness with which the authors have accomplished their task and the practical utility of the book as a help to the student of medicine. The first of these features the present volume certainly possesses to a preëminent degree, each disease being completely, though briefly, discussed from the point of view of diagnosis and differentiation from other similar affections. In regard to the practical utility of the book as an aid to students it may be said that, as the authors state in their preface in regard to their own volume, it is a great mistake for the student to use such aids for any but a subordinate purpose, not allowing them to take the place of the larger works upon the various subjects, but using them rather as a means of reviewing their knowledge and condensing what they have learned from the more extensive text-books. Used in this manner the present volume cannot but be of service to the student.

SOCIETY PROCEEDINGS.

MEDICAL SOCIETY OF VIRGINIA.

Twenty-third Annual Session, held at Alleghany Springs, Va., Sept. 13–15, 1892.

(Continued from page 362.)

DR. BEDFORD BROWN, of Alexandria, Va., stated that vertigo is not a disease, but a symptom that may result from diametrically opposite conditions. It often precedes fatal postpartum or other uterine hemorrhage. Some of the most violent types of vertigo occur in the hysterical. Alcohol and tobacco, by their toxic action on the brain and sympathetic nerves, are fruitful causes of vertigo. Temporary indigestion and protracted dyspepsia (biliousness) cause "sympathetic vertigo." There are also uremic and other forms of vertigo. The therapeutics must vary with the case in hand. When vertigo results from plethora or congestive conditions, antiphlogistics—such as cathartics and simple diet—are required. When left ventricular hypertrophy induces high arterial tension, digitalis and nitro-glycerin are the remedies. Iron and strychnine are useful in the anemic. Full doses of ammonium valerianate and sodium bromide act promptly in the hysterical and nervous forms of vertigo. For the vertigo of albuminuria, nitro-glycerin, gr. $\frac{1}{50}$, three times daily, with saline aperients and diuretics, are valuable. Diuretin or theobromine salicylate, from three to five grains in capsule, every two or three hours, is a useful eliminant. In "bilious vertigo"—vertigo sympathetic with indigestion—acid fermentation and putrefactive action are to be corrected by alkalies, followed by hydrochloric acid, pepsin, strychnine, bismuth subnitrate, etc. In conditions of nervous debility, pills of iron valerianate, quinine, and zinc are excellent. The urine should always be examined for albumin, casts and sugar. Chronic nephritis and diabetes melitus are almost invariably attended with more or less vertigo; benefit will usually be found from the use of a grain of codeine at night, nitro-glycerin, and tincture of the chloride of iron, with anti-diabetic diet during the day.

DR. JOSEPH A. WHITE, of Richmond, Va., stated that aural vertigo accompanies hyperemia and anemia and hemorrhagic conditions of the labyrinth (Ménière's disease), which are usually associated with corresponding cerebral alterations. Impacted wax or other compression of the labyrinthine fluid, alterations of the vestibule and ampullary nerves, etc., cause vertigo. Ophthalmic vertigo results from lack of coördination of the ocular muscles. Nasal vertigo is probably but a variety of aural vertigo. Laryngeal vertigo is usually preceded

by laryngeal irritation and followed by brief loss of consciousness, generally complete. The condition is so much like *petit mal* that it has been called "laryngeal epilepsy." Rarely is any lesion discernible in the larynx, although some cases have seemed dependent on a chronic laryngitis.

Dr. Joseph Price, of Philadelphia, Pa., strongly condemned the indiscriminate administration of opiates.

Dr. Charles W. Cleaves, of Wytheville, Va., read a paper entitled "Mysteries of Medicine," in which he recounted many of the ludicrous and absurd medical practices and teachings of centuries ago; of the quacks and charlatans of the present generation; closing with a description of the eminently true physician of to-day.

Dr. R. S. Martin, of Stuart, Va., read a paper on "Puerperal Fever." He reported two cases of septicemia, one of which developed on the fifth day after labor and the other after an abortion at the fourth month. In both recovery followed antiseptic treatment.

Dr. Martin also reported a case of strangulated inguinal hernia of four days' standing. Herniotomy was performed and the gut returned to the abdominal cavity. The wound sloughed on the tenth day, and fecal matter passed for three weeks by the artificial opening, which gradually closed, so that now the patient passes fecal matter per rectum, is in good health, and able to do her housework.

Dr. Joseph Price, of Philadelphia, Pa., expressed the view that puerperal fever may be dependent upon inflammation induced by gestation in a small, hidden fibroid of the uterus whose previous existence had perhaps been overlooked. Nevertheless, absolute cleanliness cannot be too much insisted upon in every maternity. No woman ought to die of childbed fever contracted by so-called "infection from without." When childbed fever does occur, nothing short of section will save some patients. Purgation is better than no treatment; but if tumor, pus-tubes, abscess, or other discharge get in the abdomen, nothing short of surgery will save. Dilatation, curetting, etc., will not do so. Undoubtedly there is such a disease as endometritis; but the cases under consideration are not fit for the curette. It is best to look upon all women just after labor as wounded. All injuries in childbed are to be looked after and treated as if ovariotomy had been performed. Physicians have been too much carried away with the idea that labor is a physiologic process, and not needing therapeutics. The preparatory treatment of the patient consists in vaginal douching with mercuric chloride solutions—before, during, and after labor. The placenta is expressed—not pulled out. The ante-partum vaginal douche prevents ophthalmia neonatorum.

Dr. Edw. Ricketts, of Cincinnati, Ohio, read a paper entitled "Colon Irrigation and Feeding per Rectum; How best Attained." He demonstrated a rectal tube of the length of the colon, and reported cases in which he had washed out the colon and administered nourishment by depositing the nutrient enema between the ileo-cecal valve and the rectum, and described and showed how to introduce the tube.

Dr. Samuel J. Fort, of Ellicott City, Md., read a paper entitled "What Shall be Done with the Imbecile," in which he related the history of the work of caring for imbeciles, as inaugurated by the elder Seguin nearly a half-century ago. He stated that no less than fifteen States make provision for the care of the imbeciles within their borders, so that, with nearly as many private institutions, almost 4000 defective children are under training. According to the census of 1890 there are 95,571 idiots and imbeciles in the United States, and as there is so small a number under training, Dr. Fort made an appeal for more particular attention to the needs and demands of this class. Even if sentiments of charity did not dictate their care, motives of true economy and the principle of self-protection upon the part of the community demanded State provision in the shape of proper institutions in which these defectives could be properly classified, educated, and trained to self-support as far as their mental capacity would permit.

In conclusion, Dr. Fort claimed that the work contemplated something more than a mere gathering together of a few children in training-schools, but that as the correlation of idiocy, insanity, pauperism, and crime would be better understood, here and there through the country will be scattered "villages of the Temple," from which "they shall go out no more, and they shall neither marry nor be given in marriage in those havens dedicated to incompetency."

Dr. Alex. Duane, of New York, read a paper entitled "Common Sense in the Treatment of Discharge from the Ear," in which he stated that the therapeutic principles to be enforced were the same that govern suppuration anywhere else, namely, cleanliness, drainage, and the removal of the badly-diseased tissues. Irrigation with a solution of common salt is best for thorough cleansing. To force out the residual discharge, Politzerization may be used as an adjuvant to the syringe. If this treatment does not cure, astringent powders (boric acid, alone or combined with zinc oxide) should be used, but only after thorough cleansing by irrigation. In removing the granulations and polypi, a good light and full control of the patient are essential. The recurrence of the granulations can be checked by the use of alcohol, with or without the addition of corrosive sublimate. In cases of caries, iodoform is to be employed. Except in extensive caries, or when the drainage is prevented either by position (in the attic) or by inflammatory hypertrophy, these measures will usually be successful; but, if they should fail, the diseased parts (drum-head and ossicles) should be removed at once, and by a specialist, if possible, as the operation requires great delicacy of manipulation.

Dr. G. Betton Massey, of Philadelphia, read a paper on "Modern Electrical Methods as a Substitute for Surgery in Certain Pelvic Affections," the conditions considered being fibroid tumors, "diseased ovaries," and displacements. He had treated sixty-eight cases of fibroids, with sixty-four practical cures. In seven cases the tumors disappeared entirely; the remainder presented various degrees of shrinking; all were symptomatically cured. The best results in these growths are not to be attained by triflers, jacks-of-all-trades, or surgeons who are nursing cases for operation; nor even by the most conscientious worker who is unfitted to gain expertness by reason of an ambition to become an abdominal surgeon. The diseased ovaries complained of by knowing patients, and removed wholesale by surgeons, represent but a part of the trouble with which the patient

suffers, the original causative metritis remaining an important factor. Such cases are often worse after castration than better, because the real disease has been left untouched. By properly-directed galvanic treatment of the uterus the latent microbic catarrh and consequential enlargement may be reduced, and the patient returned to society a whole woman. The causal conditions of displacement are similar, and, in spite of the growth and acceptance of the germ-theory of these affections, many physicians still continue the irrational employment of a skeletal support within a cavity that should have its atrophied muscles strengthened and its hyperplasias reduced.

DR. ROBERT O. OWEN, of Lynchburg, Va., read a paper on "Excision of the Female Breast," in which he stated that a large percentage of the growths of the female breast are, or, if neglected, will become malignant. Painful enlargements of the breast, not ordinary abscesses, should be watched, and excised if the slightest disposition to malignancy presents itself. He reported the case of a girl nineteen years old, with an ulcerated scirrhus of the right breast, which he removed.

DR. CHARLES M. BLACKFORD, JR., of Lynchburg, Va., read a paper on "Bacteria and Disease." He stated that bacteria affect human tissues in several ways: 1. The bacterium directly attacks and destroys the tissue in which it lodges. Thus, in inflammation followed by pus-formation, pyogenic bacteria are probably directly responsible. 2. A by-product of the life of the micro-organism is the agent that immediately does the damage. Thus, in tetanus the active poison is an alkaloidal product, or a mixture of such products, resulting from the life of the bacillus tetani. These alkaloidal products may be isolated, and are as certain to produce tetanus, if introduced into the system in sufficient quantity, as morphine is to produce its physiologic effects. 3. Some bacteria are pathogenic only at times; under some peculiar environments they acquire malignancy. 4. Conversely, some bacteria, that are naturally violently malignant, in an unsuitable medium become attenuated, so that, on inoculation, only a mild type of the disease will follow.

DR. JOSEPH PRICE, of Philadelphia, Pa., commended asepsis rather than antisepsis, and detailed the method employed and details observed by him in operations.

DR. L. G. PEDIGO, of Roanoke, Va., defended Listerism. Germs cause suppuration and destruction of organic tissues, but chemical agents suffice to destroy them.

DR. THOMAS J. MOORE, of Richmond, Va., contended that asepsis is simply a step in advance of antisepsis.

DR. SAMUEL T. EARLE, of Baltimore, Md., reported a "Successful Case of Colectomy for the Closure of an Artificial Anus." A colotomy had previously been performed by him in February, 1892, for ulceration of the descending colon. This resulted in the cure of the patient, who then wished his artificial anus closed. The operation was performed June 6, 1892. The method of enterorrhaphy devised by Dr. Halsted, of the Johns Hopkins Hospital, was used, and was found very satisfactory in every particular. The patient had an evacuation from his bowels, per rectum, on the sixth day after the operation, and left the hospital at the end of the third week.

DR. M. W. O'BRIEN, of Alexandria, Va., read a paper entitled "Injuries of the Knee; Their Treatment and Results, with Special Reference to the Prevention and Cure of Suppurative Action in and about the Joint." He expressed the view that in the treatment of wounds and congestive and inflammatory conditions at or near the knee-joint it should be a surgical axiom to afford the joint and the entire limb from the body down absolute rest by fixation. If serum is effused into the knee-joint it should be antiseptically withdrawn; the foot should be elevated, and the entire limb put in plaster, with the leg straight. This plaster-dressing makes both extension and counter-extension, securely locks the joints, holds the muscles firmly but gently in place, and controls the reflexes. The limb rests, circulation is equalized, pain is relieved, heat and fever subside, and the patient rests without an opiate. This splint can be opened its whole length like a book, the joint inspected, etc., and the mould put back and held with a roller; in brief, the limb is kept in as comfortable a position as possible. In case of injury to the knee-joint the extremity should never be dressed in a flexed position. Though some surgeons prefer this position, experience and results prove that it is not the best—particularly so if the flexion is great. With the limb in a straight position, perfect rest is secured. To apply evaporating lotions and put the leg at so-called rest on a pillow can result only in evil. By keeping the leg straight in the plaster-dressing suppuration and ankylosis are rare. Should pus form, the joint is to be widely laid open, the fluid thoroughly washed out, drainage-tubes introduced, and the wound flushed with corrosive-sublimate solution, while the general condition of the patient is to be improved by food and the use of quinine.

DR. JOHN HERBERT CLAIBORNE, JR., of New York, read a paper entitled "Acute Inflammatory Earache." He referred only to cases of earache dependent upon acute inflammation of the lining membrane of the middle ear. Among causes he included the agencies that give rise to acute colds in general, the entrance through the nose and naso-pharynx into the Eustachian tube of salt-water in bathing, the blowing of mucus into the Eustachian tube by forcible and violent blowing of the nose, the use of the nasal douche by the method of "snuffing up" the liquid. As to treatment, he strongly opposes paracentesis of the drum of the ear, as being dangerous, except in the hands of an expert. Dr. Claiborne always empties the middle ear sufficiently for immediate comfort by using the Eustachian catheter and by gradual, long-continued, and repeated inflations, repeated three or four times in a few hours. In subacute cases he applies a 4 per cent. solution of silver nitrate, but not in acute cases. Sometimes he sprays Dobell's solution in the nose and throat. The most reliable treatment consists in:

1. Hot 10 per cent. solutions of cocaine instilled into the outer ear, and retained for from five to ten minutes.

2. Hot solutions of boric acid instilled into the outer ear; spongio-piline wet in hot water and applied over the whole region. Hot salt and hot water-bags similarly used are also useful.

3. Inflation by the bag and by the continuous method with the Eustachian catheter.

4. The administration of a drastic dose of Epsom salts, which is used as a simple systemic remedy.

Blistering behind the ear is of no service in acute aural catarrhs, but may be of assistance after the acute stage has passed.

DR. GEORGE TUCKER HARRISON read a paper on "Gonorrhea in Women." He classified gonorrhea under four heads: (1) Acute perimetritis; (2) Recurrent perimetritis; (3) Chronic perimetritis, and (4) Ovaritis. Microscopic examinations have demonstrated the presence of gonococci in pus taken from diseased tubes, and it is generally conceded that most of the inflammatory conditions of the tubes can be traced to gonorrheal infection. The symptoms are uterus enlarged and sensitive, menstruation profuse, painful, and frequently accompanied by dysmenorrhea. The infection rarely extends from the uterus to the Fallopian tubes, producing purulent salpingitis, the pus, by this route reaching the peritoneal cavity, producing circumscribed peritonitis, and involving to a greater or less degree the ovaries and the broad ligaments. Pain ensues, and pus exudes from the distended tube of the corresponding side. In consequence inflammatory action is set up; the tube becomes occluded by adhesions; then distended; loses its curves; and becomes sausage-like. Any over-exertion brings on an acute attack producing peritonitis. Nervous symptoms are induced that result in neurasthenia or hysteria. Sterility often results. In treatment, prophylaxis naturally claims the first and most careful attention. It is hardly possible to stamp out the disease, though the general practitioner can correct it to a large extent. The gynecologist should be careful in dilating the womb of a woman who is affected with gonorrhea, as the infection is easily carried into the uterine cavity, thence to the tubes, etc. Operations are not always demanded, as dilating the uterus and curetting and packing with iodoform-gauze will often relieve, but if conservative methods fail, then the surgeon's more radical aid is demanded. Operations are justifiable only when not more dangerous than the disease itself. Owing to recent advances in surgery, the risk is robbed of many of its dangers; but the environment of the patient must always play an important part in the treatment.

DR. WILLIAM LEE HOWARD, of Baltimore, read a paper entitled "Hypnotism as a Therapeutic Agent," in which he gave a comprehensive idea of the limits of the subject. He expressed objection to the name, as it implied sleep, while but few cases require putting to sleep. He maintained that all public demonstrations of this subject should cease, and that laws should be enacted allowing only reputable medical men to practise hypnotism, and admitted that many hypnotic subjects can be made to commit any crime.

DR. IRVING C. ROSSE, of Washington, D. C., read a paper on "Sexual Hypochondriasis and Perversion of the Genesic Instinct," in which he considered the various means employed to produce a venereal orgasm independently of the conditions of normal coitus, and known comprehensively as genital abuse. Of all hypochondriacs, those that refer their sufferings to the genital organs are the most miserable.

The question of sexual perversion is one of social hygiene touching mental pathology in many points. It must be recognized that continuous suggestion, or the reading of lewd literature, or excessive indulgences in fondling embraces under improper circumstances do affect the lower lumbar reflexes in such a way as to bring about sexual hypochondriasis, not to mention their influence in the dissemination of immorality and the encouragement of crime. The treatment of cases of unnatural practices consists in prevention and education, with employment of proper medical and surgical measures. Self-control should be cultivated, especially at the epoch of puberty. As an adjuvant, nothing is better than gymnastic and athletic training.

DR. JOSEPH PRICE, of Philadelphia, Pa., read a paper on "The Treatment of Hard Tumors in the Pelvis." He advocated early treatment of small abdominal and pelvic tumors, before real danger develops. Many a death that has followed the removal of large tumors has been attributed to surgery, when the too long neglected condition of the patient was at fault. Recovery is rare in cases in which pus has formed in the pelvis, without surgical intervention. Dermoid tumors especially require early attention. A tumor that is small and very painful may be suspected to be a dermoid. Small, hard tumors in the pelvis are likely to interfere with conception, and often with delivery. A dermoid cyst on one side may cause abortion after abortion, when the other side is entirely healthy.

The nature of the neoplasm will determine whether or not an operation is justifiable. Tumors of the uterus, though small, may be dangerous by reason of their shape, as they often assume unusual forms, and are likely to exert pressure upon organs in their vicinity, as the kidneys, bladder, or rectum, while they may interfere with pelvic circulation to a serious extent. As results of such pressure there may be much edema and pain, while the cause itself seems altogether inadequate. Small tumors are the easier to operate on, and are the less complicated. The greater the size of the tumor, the longer the incision, and the more protracted the operation. Large tumors often have extensive adhesions to the bowel, omentum, and peritoneal parietes. Such a condition is exceptional in small tumors. If the tumor is allowed to go on to cystiform or to malignant degeneration, the result of the operation is all the more serious. Rupture of the cyst may occur, with leakage, and be followed by general peritonitis; while a malignant growth may invade the whole abdomen. In many cases of uterine fibroids the appendages are also diseased. The ovaries may degenerate into cystomata, while the tubes, adherent and deeply imbedded in the pelvis, are also likely to be occluded and to contain some poisonous fluid. In puerperal hysterectomy, the verdict of experienced operators is strongly against the intra-peritoneal method of procedure. The extra-peritoneal method gives almost perfect results in pueperal hysterectomy. The method practised by Tait, Bantock, and others is to secure the stump outside the abdominal wound by a *serre-nœud*. This is preferred because the stump is composed of contractile tissue, the shrinkage of which, when constricted as a whole, permits of relaxation of the pressure on the vessels, with the danger of fatal hemorrhage. The extra-peritoneal method affords the only assurance against hemorrhage.

The Kœberlé *nœud* is the best of instruments of its kind when carefully applied to a well-made pedicle, transfixed by two long pins before cutting away the tumor. The pedicle is to be firmly drawn into the lower extremity

of the incision, the parietal peritoneum stretched below the line, and the incision closed.

The value of the elastic ligature method lies in the fact that the ligature contracts upon the tissues as they shrink, and thus maintains a continuous contraction.

Among accidents that may follow operation are constriction of one or both ureters, or of a portion of the bladder and inclusion of a portion of the bowel in the *serre-nœud*. These may be avoided by incising the capsule high up on the tumor — from four to six inches above the bladder or below the tubal and ovarian attachments to the tumor. The capsule of the tumor is to be retracted to the surgical neck of the uterus or to the circumference of the internal os. The pedicle should consist of cervical tissue only—small, reduced, and carefully constricted. The risk of hemorrhage, sloughs, and suppuration above the pedicle are minimized by making a small pedicle, well placed in the lower angle of the incision. It is dangerous to apply the *serre-nœud* about the base of the large irregular tumor, without first having manufactured a pedicle. Drainage is always to be provided for when there are extensive adhesions or pathologic changes due to pressure. The tubes should be kept dry and clean. Three or four stitches should be introduced between the tube and pedicle. In the after-treatment dry dressings yield the best results, and need not be changed for ten or twelve days. Silkworm-gut is the strongest, finest, cleanest, least irritating and most reliable of the suture materials. The recumbent posture should be maintained for six or eight weeks, to favor organization and consolidation in the line of the incision.

Insanity has been frequently observed after hysterectomies, ovariotomies, etc. On the other hand, as many, if not more cases of insanity have been cured by the operations.

DR. F. M. BROOKES, of Fairfax Station, read a paper on "The Continued Administration of Digitalis, Illustrated by the Report of a Case."

The points of interest in the case were the long-continued use of the drug—from November, 1889, to September, 1892; and the size of the dose—35 drops three times daily.

CORRESPONDENCE.

RÖTHELN (RUBELLA).

To the Editor of THE MEDICAL NEWS,

SIR: Several articles that have appeared in THE MEDICAL NEWS (July and September numbers) on the subject of Rötheln induce me to give, in abstract, some interesting and instructive facts concerning the history and differential diagnosis of "rubella" (Rötheln), gleaned from medical literature, which are, perhaps, not generally known to the busy practitioner.

Before doing so I wish to make a plea for the substitution of the name "rubella" for Rötheln in the English language. Rötheln (pronounced "rœteln") is mostly pronounced *à l'anglaise—i. e.*, incorrectly—becoming meaningless and offending to the ear. It is a purely German word, originating from the German adjective "roth" (pronounced "roat") "red," really meaning, "little red spots." The name "rubella" was proposed and used by Squire, and, after him, by other prominent medical authors and teachers. It will be understood by everybody, and will also be correctly pronounced. We might as well use, instead of "pneumonia" or "lung-fever," the German word "Lungenentzündung; or, instead of "parotiditis," the German for it, "Ohrenspeicheldrüsenentzündung."

As to the differentiation of "rubella" (Rötheln) from measles, Squire says: "A century was required to complete the separation of measles from smallpox. Another century passed, from Sydenham to Withering, before scarlet fever was finally distinguished from measles . . . The century is fulfilled that should give autonomy to rubella."

Von Genser,[1] of Vienna, reported three cases of "rubella" following measles in three children in the same family. He gives the following table of differential diagnosis of "rubella" (Rötheln) from "measles," based principally upon the publications of Griffith and Atkinson, and upon personal experience.

RUBELLA.	MEASLES.
1. INCUBATION.	
Very variable; may last from one day to three weeks, but rarely less than one week.	Mostly fourteen days, with extremes of seven, nine, or ten days.
2. PRODROMES.	
Usually none; or, if present, at most of from twelve to fourteen hours' duration.	Duration generally is three days; on the fourth day the exanthem appears.
A. *Catarrhal symptoms.*	
Frequently entirely absent; or, if present, slight, and limited to trifling hyperemia of the conjunctiva; catarrh of the nose, pharynx, or bronchi is much rarer.	Nearly always present in a marked degree; invade the conjunctivæ, nose, and air-passages; severe cough. These symptoms are always more marked in *even mild cases of measles than in severe cases of rubella.*
B. *Vomiting.*	
Very rare.	Less rare.
C. *Fever.*	
Mostly very slight, or entirely absent; the temperature rarely rises above 100.5° F.	Always present; often pronounced.
3. ERUPTION.	
Pale rose-red in color. Macular. The spots are usually spherical and discrete; they rarely tend to confluence; they are smaller than those of measles. Appears first on the face and extends rapidly, so that often it has disappeared from the places first attacked before other parts become invaded. Sometimes it shows a maximum duration of twenty-four hours or less, but remains generally for forty-eight hours.	Deep red, raspberry color. Maculo-papular. The blotches are usually of irregular outline, often coalescing into larger blotches of a dark purple-red color. Appears first on the face, but gradually extends, within two or three days, over the whole body. The spots remain in complete bloom until the maximum is reached. They usually begin to disappear on the sixth day.
Catarrhal symptoms continue in slight degree.	*Catarrhal symptoms* are more intense; often violent bronchitis is present.
Slight sore-throat is often present, not interfering with swallowing; a punctate or diffused redness appears upon	*Sore-throat* is rare. From eighteen to twenty-four hours before the eruption appears upon the skin, small papules

[1] Jahrb. f. Kinderheilkunde, Bd. xxviii, p. 420. Translated by Albert Pick, M.D., in the "Annals of Gynecology and Pediatrics," July, 1890.

the mucous membrane of the pharynx.	or spots of the size of a flax-seed may be seen scattered over the mucous membrane of the pharynx.
The temperature is rarely over 100.4° F., and often normal on the second day. There is no apparent relation between the temperature and the eruption.	*The temperature* is usually between 102° and 104° F., rising slowly. Its maximum bears a close relation to that of the eruption. Complete decline seldom occurs before the seventh or eighth day.
The lymphatic glands behind the ear and in the neck are always enlarged. (To this too much weight is attached by some authors. On the one hand, many cases of rubella occur with little or no significant swelling of the glands. On the other hand, this feature is frequently described as present in measles.)	*The lymphatic glands* are only sometimes enlarged.
Diarrhea almost never occurs.	*Diarrhea* is frequent during the eruption.
Desquamation is very rarely observed, and then only in the form of light, hardly visible furfuraceous scales.	*Desquamation* is furfuraceous and constant, lasting for several days.
4. COMPLICATIONS.	
Unusual.	Usual; the respiratory organs being especially involved.

ALBERT PICK, M.D.

MANCHESTER, N. H.

THE AUTUMN CLIMATE OF ATLANTIC CITY.

To the Editor of THE MEDICAL NEWS,

SIR: Numerous medical friends have inquired of me concerning the climate and sanitary condition of Atlantic City in the autumn. Still others I hear of, who have advised their patients against remaining here during the fall months. This doubt and prejudice can only be explained by the faulty conditions that existed before the days of sewerage and water-works. This subject has been fully discussed by me in a paper published in the Baltimore *Medical Journal* of December 14, 1889.

It has always been a source of wonder to me that during the three months—September, October, and November—when out-of-door life at Atlantic City is for invalids and convalescents the most enjoyable and healthy, September, especially, being here the most delightful month of the entire year, very few visitors are found in the hotels. It is natural, of course, that the crowd of mere pleasure-seekers should hasten back to the cities with the opening of the schools and the resumption of activity in all lines of business; but what of the thousands of ailing ones who are always better for being away from the foul and ozoneless urban air, and usually receive positive benefit from a sojourn at the seaside at any season when they can spend most of their time safely and enjoyably out of doors? Many such who spend the summer at the shore, tire of its attractions by September, and go to the mountains for a change; but the same logic should send to the shore the many invalids who, after a summer in the mountains or at the springs, find the chill autumn nights unwelcome, and yet cannot safely return to the city.

The meteorologic conditions make the autumn climate at Atlantic City particularly equable and balmy, more so than at any other season except the latter part of summer, when practically the same conditions exist. Bright, sunshiny days are the rule, clouds or rain the exception. The temperature during the daytime varies from about 70° to 80° in September, from about 60° to 70° in October, and is more often above than below 60° during the middle of the day in November. Sea-breezes prevail during the early autumn more generally than at any other time of the year, and the ocean being such an immense body of water retains its heat long, thus aiding greatly in elevating and equalizing the temperature of the air.

Next, as to the sanitary condition: The place has been supplied with an improved system of underground sewerage since the year 1885, and with a pure water-supply brought from the mainland since 1882. More recently, a second system of water-works has been introduced, which supplies water of the finest quality from deep artesian wells. That part of the town in which ninety-nine hundredths of the hotels and boarding-houses are found, to wit, that fronting on the ocean, and extending back nearly half a mile to Atlantic Avenue, leaves little to be desired in the matter of sanitation. The public houses devoted to the entertainment of vistors, as well as the cottages that are rented to the same class in spring and summer, are almost universally connected with the sewers, and in any of such connected houses the most delicate and sensitive invalids are, beyond question, as safe at any season of the year from miasmatic or zymotic diseases as they could be in any part of the habitable globe. Malarial diseases, such as intermittents and remittents, do not arise in the town; at least, during my residence of fifteen years I have seen none that could have been even suspected of having originated here. Very respectfully yours,

BOARDMAN REED, M.D.

ATLANTIC CITY, N. J.

A GOOD WORD FOR THE PHARMACIST.

To the Editor of THE MEDICAL NEWS,

SIR: So many articles have appeared in the medical journals charging pharmacists with incompetency, substitution, extortionate charges, illegitimate sale of patent medicines, counter-prescribing, etc., that I feel that there are two sides to the question. I believe that physicians should carry and dispense at the bedside such remedies as are at the time necessary, not because the homeopath does, but that the patient should receive relief as soon as possible, in this way saving much suffering and ofttimes life; while the writing of prescriptions should be reserved for medicines that are to be used for a longer time and in greater quantity.

Most of the pharmacists of to-day are educated men, and their skill enables physicians to use and dispense their remedies in a convenient and quickly-acting form. How many physicians graduated during the past ten years from the various medical colleges could be trusted to prepare and dispense the medicines used in ordinary practice? Few indeed, unless they had previous pharmaceutical training. The knowledge of materia medica and chemistry required of graduates in pharmacy is far greater than that required of graduates of medical schools, while the *practical* pharmacy taught at medical colleges is indeed insignificant.

If physicians are to be dispensers of medicine, not only should a preliminary course in physics and chemistry be required, as suggested in your editorial of July 30, 1892, but a more thorough training in pharmacognosy and pharmaceutics should also be given before the teaching of therapeutics is begun, extending the course even to five years if necessary, as advised by the late Prof. S. W. Gross—for such knowledge is more essential to the physician than a knowledge of German and French, although I would not decry these.

Regarding extortionate charging, no man who expects to continue in business will charge more than his neighbor, or more than a fair value for his goods. In my experience as a pharmacist during eleven years I found that the fault-finding and charges of substitution came from physicians, as a rule, who were so grossly ignorant of the "tools they work with" that, being disappointed in the use of a prescription, copied perhaps from some formulary, they sought to cover their ignorance by crying "fraud."

When medical colleges shall teach the requisite amount of physics, chemistry, pharmacognosy, and pharmaceutics to fit their graduates to dispense medicines, then the teaching professors in our medical colleges will not so severely criticise a State Board of Examiners that asks "How is phosphoric acid prepared," or "Give the specific gravity and physical properties of chloroform."

Regarding patent medicines, I do not believe that many pharmacists handle them from choice, but from necessity. I would not altogether condone this fault, but how could they otherwise fill prescriptions and orders, as I have had to do, for Ayers' Cherry Pectoral, Jayne's Vermifuge, and even Humphrey's Specifics, sent by members of County and State Medical Societies, to say nothing of the semi-proprietary "formula on the bottle" mixtures daily prescribed by physicians.

It is actions like these that discourage and antagonize the true pharmacist, who should be our friend and ally; and I do not wonder that at times he thinks he can prescribe as well as some of his medical acquaintances. Do you? THEO. G. DAVIS, M.D.

BRIDGETON, N. J.

THE SELECTION OF A CLIMATE FOR TUBERCULOUS PATIENTS.

To the Editor of THE MEDICAL NEWS,

SIR: A few words in behalf of the tuberculous patient in selecting a suitable climate may not be amiss. It is of frequent occurrence that such a one dies while *en route* across these mountain ranges, or within from one to three weeks after his arrival among them.

If a tuberculous patient is compelled to use his full lung-capacity in low altitudes to obtain sufficient air, it would be worse than useless to send him to high altitudes, where he must breathe more air to obtain a corresponding amount of oxygen.

To make this plain, we may approximately add for each thousand feet of elevation one-thirtieth to the volume of air required. In proportion, then, as the lungs are diseased must the elevation be chosen. This rule not only applies to the condition of the lungs, but the heart must do more work as we ascend.

With these facts in mind there would be less mistakes made in selecting a climate for these unfortunate people.

Respectfully,

N. E. CHARLTON, M.D.

TRINIDAD, COLO.

BOOKS AND PAMPHLETS RECEIVED.

Hystero-myomectomy; with a Report of Four Cases. By Hunter Robb, M.D. Reprint, 1892.

Bacteriological and Clinical Investigation into the New Antiseptic—Dermatol. By Arthur K. Stone, M.D. Reprint, 1892.

Diabetes Mellitus. By J. O. Jenkins, M.D. Reprint, 1892.

Concerning Muscular Advancement. By Lucien Howe, M.R.C.S. Eng. Reprint, 1892.

Book on the Physician Himself, and Things that Concern His Reputation and Success. By D. W. Cathell, M.D. Tenth Edition, carefully Revised and greatly Enlarged. Philadelphia and London: The F. A. Davis Publishing Company, 1892.

Proceedings of the Third Annual Meeting of the Tri-State Medical Society of Alabama, Georgia, and Tennessee, 1892.

Evolution from a Scientific Standpoint. By John Pope Stewart, M.D. Reprint, 1892.

The Lacerated Cervix. By W. G. Bogart, M.D. Reprint, 1892.

Bromide of Ethyl as an Anesthetic. By E. H. Kuykendall, M.D. Reprint, 1892.

Should Not Oculists be More Careful in Prescribing Colored Glasses? By W. L. Bullard, M.D. Reprint, 1892.

Progress of Medicine. Medical Legislation vs. Homeopathy. By Frank H. Barr, M.D. Reprint, 1892.

Preliminary Observations on the Pathology of Sea-sickness. By J. A. Irwin, M.A., M.D. Reprint, 1881.

The Influence of Sea-voyaging upon the Genito-urinary Functions. By J. A. Irwin, M.A., M.D. Reprint, 1885.

Electricity vs. the Curette in the Treatment of Bleeding Fibroids of the Uterus. By Augustin H. Goelet, M.D. Reprint, 1892.

Medical Manhood and Methods of Professional Success. By C. H. Hughes, M.D. Reprint, 1892.

Insomnia in an Infant, with Reflections on Pathological Sleeplessness. By C. H. Hughes, M.D. Reprint, 1892.

Note on the Hysterical Concomitants of Organic Nervous Disease. By C. H. Hughes, M.D. Reprint, 1892.

Dipsomania. By Lucius W. Baker, M.D. Reprint, 1892.

Human Monstrosities. By Barton Cooke Hirst, M.D., and George A. Piersol, M.D. Part III. Philadelphia: Lea Brothers & Co., 1892.

A Manual of Chemistry. Inorganic and Organic, with an Introduction to the Study of Chemistry. By Arthur P. Luff, M.D., B.Sc., Lond., M.R.C.P. Illustrated with 36 Engravings. Philadelphia: Lea Brothers & Co., 1892.

The Essentials of Histology, Descriptive and Practical. For the Use of Students. By E. A. Schäfer, F.R.S. Third Edition, Revised and Enlarged. Illustrated. Philadelphia: Lea Brothers & Co., 1892.

Rupture of the Aortic Valves, with Demonstration of Specimen. Aneurisms of Right Auricular Appendix. By Ludvig Hektoen, M.D. Reprint, 1892.

Education of Business Men. An Address before the American Bankers' Association. Reprint, 1892.

Second Annual Announcement and Catalogue of the School of Medicine of the University of Texas, Session of 1892–93. Austin: Henry Hutchings, 1892.

Circular No. 34, State Board of Health, Commonwealth of Pennsylvania, 1892. Treatment of the Apparently Drowned or Suffocated.

Circular No. 35, State Board of Health, Commonwealth of Pennsylvania, 1892. On the Prevention of Blindness.

Genito-urinary and Venereal Diseases. By Charles H. Chetwood, M.D. "The Students' Quiz Series." Philadelphia: Lea Brothers & Co., 1892.